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GLEANINGS IN BEE CULTURE

A JOURNAL DEVOTED TO BEES AND HONEY AND HOME AND HOME INTERESTS.

ILLUSTRATED SEMI-MONTHLY

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CURIOS how we sometimes get a thing in a wrong light. Now there's Doolittle, whose honesty I'd stake against any one of his opponents; but he got the wrong perspective on that veneering business, sure.

YOUR MEASUREMENT, Mr. Editor, agrees with mine. I have never found less than $\frac{1}{4}$ inch space between two faces of comb honey, or between a face and a separator. [Yes, I feel quite sure $\frac{1}{4}$ inch is correct. I am wondering how Bro. Crane, who is usually so accurate, was a little off here.—ED.]

ROUGHNESS in a section-cleaner is hardly objectionable if it has speed enough. How would something like a horseradish-grater surface do? [A grater would be too rough, I am thinking. Suppose, however, you take a piece of tin and punch some holes in it, and then try a section-box on it.—ED.]

IN THE CASE OF A. I. Root vs. Sawdust Boy, p. 362, the jury has rendered a verdict in favor of S. B., and against A. I. R. The boy gave truthful answer to the question asked, and then obeyed the simple command of his chief. The said A. I. R. is the one that ought to have found out "consequences" before giving a direct command. Said A. I. R. to pay all costs.

"THE LARVA IS FED SIX DAYS," says Doolittle, p. 352. That used to be the time when it took 17 or 18 days for a queen to mature. Cowan says the queen or worker larva is fed 5 days and the drone 6. See Guide Book, p. 10. Dadant's Langstroth, p. 88, gives growth of larva for queen, $5\frac{1}{2}$ days; worker, 6; drone, $6\frac{1}{2}$. Cheshire, Vol. 1, p. 20, says, "after about four days' feeding . . . no more food is supplied." [I suspect that each one of them is all right, for the reason that the time may vary all the way from 5 to 6 days.—ED.]

B. F. ONDERDONK says "West India sugar" is the true cane sugar of commerce, called raw sugar. "Is mixed with beet sugar, refined, losing half its sweetness when it becomes granulated sugar." Now, I'm all stirred up to know more. Is it the mixing with beet, or is it the refining that loses the sweetness? [We have

had sent to us samples of cane sugar that were known to be such, and samples of beet, and I doubt whether anybody but a chemist could tell the difference by the taste; but somewhere I have seen it stated that one is as sweet as the other—perhaps not, though.—ED.]

NO IMPROPRIETY in my sticking on "Ed." whenever I like, says a footnote, page 335. Good! Just what I've been wanting this long time. So, here goes:

The T super is very much superior to what is called a section-holder.—ED.

Unfinished sections should be leveled down just enough to remove the soiled parts. Any thing more than this is folly.—ED.

[A certain editor down in Ohio says Dr. Miller is off on the T-super question, but all right on the unfinished-section matter.—ED. IN OHIO.]

I'LL TELL YOU, Mr. Editor, why I don't prove my "individual faith" in long tongues by my individual works. Just because I can't get you to get me a proper glossometer. [Glossometer! why, doctor, you can have the one that Martin made for us years ago. But do you know of a good machine for measuring bees' tongues? I suspect that as good a thing as can be devised is simply a wire cloth set at different distances from a surface of honey. Let the bees reach through, then raise the wire cloth to a point where they can just reach it. Measure the distance, and you have the length of the bees' tongues. What better glossometer do you want?—ED.]

"ARE YOU SURE, doctor—real sure—that fire is absolutely necessary in your cellar under any circumstances?" asks the editor, p. 336. I think I'm sure. I spent the winter of 1872-'3 in Cincinnati, leaving fifty colonies in the cellar at Marengo without fire. I think 4 of the 50 survived, and I think there would have been no such loss with fire. When the temperature in cellar stays for weeks below 37° I think fire necessary; and a benefit if below 44° . I've hunted and hunted, but can't find about Harry Lathrop's dugout. What was the temperature, and for how long? [May be you are right; but somehow, when the other fellows get along without fire, at an equally low temperature, I have a sort of feeling that you could. With regard to Lathrop's dugout, I would state that I read the manuscript, and was under the impression that it was publish-

ed; but the boss printer says it is still "on the hook;" but it will be printed in this issue. But the fact of the water being in the cellar was mentioned, nevertheless.—ED.]

A. B. ANTHONY asks whether all our bees may not properly be termed "wild." I don't like to risk a very positive answer, but I should think not. While I don't control any single bee as I do a horse, taking a colony as a whole it is decidedly under control, or, if you please, domesticated. If a swarm from my apiary gets away from me and goes into a hollow tree, it's wild. If you find it and take it home in a hive, it's tame. If it deserts your hive and goes to the woods, it's wild. It might be an important matter sometimes, legally, to know whether bees are wild or tame. I don't believe you can make me pay taxes on wild animals.

D. W. HEISE'S QUESTION, p. 344, suggests that the Long-Idea hive is little known in this country. It is, however, well known in Europe, and in extensive use for years. Such hives are called "lager" hives in Germany, and include the Thor-stock and the celebrated "Bogenstuelper" of Gravenhorst. The Layens hive in France is also in the same class. But somehow the idea doesn't flourish on American soil. [I have been wondering, doctor, whether the value of the Long-Idea hive rested, not in the long idea itself, but in the bigness of the colony. If that is the case, then I am a Long-Idea man; but instead of having the "long" spread out horizontally, I would have it spread out perpendicularly.—ED.]

A BRIGHT IDEA gives G. M. Doolittle in *American Bee Journal*. In cutting foundation, have a very thin knife. Then, instead of heating the knife otherwise, make several rapid strokes in cutting, and the friction will do the heating. Thanks, Bro. D. [My! oh, my! I supposed everybody knew that; but how often it happens, as Doolittle has well said, we may be using some little kink that we supposed all the world knows of. Before we made foundation by the new process, by which the trimming is done by machinery, we recognized the fact that drawing a thin sharp knife quickly across the wax a few times would generate heat of itself; but let me tell you, doctor, a knife kept in boiling water, and drawn across the sheet of wax rapidly, between times, is better still.—ED.]

"FOUL-BROOD HONEY will be all right if it is boiled for a period of four or five minutes," p. 354. Wouldn't longer time be better? Bacteriologist Mackenzie (Howard's Foul Brood, p. 42) says spores grew after boiling 2 hours, but there was no growth after $2\frac{1}{2}$ hours. If that's all straight, wouldn't it be better to boil $2\frac{1}{2}$ hours? [I based my statement on the authority of Cowan. I think he once told me that boiling for 45 seconds would kill every spore. However, we never boiled any honey that was infected with foul brood. We made a short job by burning it up, brood-comb, frame, and all. No one ever heard of a case of foul brood resulting from the use of foundation made from wax coming from an infected hive, even though the wax had been subjected

to a temperature much less than 212 degrees, and for a much less period than $2\frac{1}{2}$ hours. If there is such a case, let's hear it.—ED.]

THE WHOLESOMENESS of honey is recognized by physicians. A friend of mine is forbidden by physicians to eat any thing in the line of sugar or starch, but is allowed pure honey. I use honey with postum cereal because I think it safer. But if the honey is best quality I like it as well as sugar. [It is a fact that I know positively in my own experience—no guesswork about it—that I can eat a certain amount of honey without inconvenience; but cane sugars, maple sugar, candy, and all such stuff, I am obliged to let alone. All these, strangely enough, seem to bring about a sort of sneezing catarrh; and honey will likewise do so if I take too much of it at a time. Now, doctor, as an "M. D." I will ask you to explain why the mucous membranes of my nostrils are affected more in one instance than in another? I have tried it over and over again. One will cause sneezing in a day or two, while the other is, for the same quantity, very much less inclined to do so. Some day I'll give you some of my observations along these lines; i. e., how cane sugars and starch affect others in much the same way.—ED.]

ROBBING is stopped thus by M. F. Chatelain: Smoke the hive of *the robbers*; in two or three minutes close the entrance. Wait till the returning bees crowd outside; open enough to insert smoker-nozzle, and smoke. Open entrance wide, and let all go in. Then smoke like sixty till bees rush out of hive. That stops 'em. —*L'Abeille et sa Culture*. [The plan would work tiptop providing the robbing were confined to one colony, as it is sometimes. Whenever we get ready to move bees from an outyard during the middle of the day we give the entrances of the hives to be moved a good smoking; and in about five or ten minutes give them another smudging. The effect of all this is to prevent the bees from flying—that is, they stay at home, either because the smoke makes them sick or because things appear to be in bad shape at home, and need "all hands to straighten things up." But when robbing bees get started at *our* yard, there are apt to be more than a dozen colonies having a hand in the fracas; and if we do not attend to things pretty soon, every colony in the yard will be "in it." Robbing, like fire, should be attended to at the start; and I do not know but Chatelain's method is as good as any. But in the mean time I would slip one of our mosquito-netting bee-tents right over the hive. This prevents robbers from getting in, and confines to the tent those going out. When robbing is quieted down I sometimes let loose the robbers from the tent after they have had time to sober down and think over the error of their ways.—ED.]

"I DO NOT SEE how you and the rest of the chaps put me on the same side of the fence with Doolittle. I supposed I was on the tip-toppest part of the fence."—Editorial footnote, p. 336. O Ernest! Just listen to what you said. "At present I do not see any objections to putting up honey in the manner Mr. D.

describes. . . The front of the case, as Mr. D. says, will be apt to have the best honey out for display, and not for the purpose of deception." Do you call that on the fence? And, anyhow, what business should you have on the fence? If you get on the fence in a matter of that kind you ought to be knocked off with a club—knobs, too, on the club. [Oh my! doctor; you are not fair. You have taken patches of my footnote and put them together in such a way that they put me clear over on Doolittle's side of the fence. I am now going to take two more patches—the very ones you omitted—from that same footnote. Read: "With regard to facing crates of honey or barrels of apples, I think it all depends upon whether *intentional* deception is used. . . Whenever we buy honey we always judge of a crate by random sections picked out here and there in the crate, and never by the facing." Notice the words "*intentional* deception." Put up your club with knobs on. I grant that these last quoted lines do not put me clear on the other side of the fence; but used in connection with those you quote, they take off the curse somewhat. However, in our last issue I entirely renounced Doolittle's doctrine, and got on the other side of the fence.—ED.]

honey, and received a quantity of comb honey faced up with nice XXX white honey, and behind the facers you would find only X or dark buckwheat honey; what would you think of the bee keeper who put it up?"

"Why, the man who would do that is a fraud," replied Mr. Hatch.

"That is just what Doolittle advises,"* said I.

"Doolittle?" said Mr. Hatch.

"Yes, Doolittle."

"Well, I can't help who said it," replied Mr. Hatch; "it is a fraud; and any commission house receiving it would so pronounce it."

Mr. Searles, an apple-dealer with whom I am at present staying, complains greatly when he gets a box of apples that are faced up nicely, and beneath there are all sorts, just like Doolittle's honey. Said I, "Mr. Searles, what do you think of a man who puts up his apples that way?"

"He is a fraud," said Mr. S.; "and when I once find a man who is up to such tricks I never patronize him again."

"Well," said I, "suppose he tells you that the box is faced up with good apples, and that there are poor ones below; what would you do?"

"Well, I don't want apples unless they are all one or the other. If a person puts up his apples that way he is liable to sell them without telling the fact; or if he does tell the facts, the next man will not. Oh, no! I want straight goods every time, and so do my customers."

Now, I am quite sure that every straight man will say the same thing. Of course, we all know that Mr. Doolittle is an honest man, and means well, but he has a strange way of showing it sometimes.

Just see what Doolittle says about painting nives in a recent number of the *Progressive*. Now, Bro. Doolittle could not have been giving that in a broad way. His advice was all right for York State, but how about hot climates? Here we want a hive that will not absorb the heat of the sun. From my observation a hive that is black with age is more liable to have the combs melted down in our hot weather than is a hive that is kept well painted and white. One rule will not work well for all climates.

Well, wonders will never cease. The *Review* has started a joke department. Just see the column of good white paper and black ink that Mr. Aspinwall wasted in the last *Review*. But really the most astonishing thing in the same number of the *Review*, under editorial offerings, is that the editor winds up one of the offerings with a "whoop-e-e!" Well, just as sure as you live I should not be more astonished should I go into a graveyard and have a tombstone waltz up to me and shout "Whoop-e-e!" Just think of it! "whoop-e-e" from the dignified and sedate editor of the *Review*! I did think for a minute that I would stop the paper; but I will hold on a little longer. This joking business in bee-

* Doolittle did not advise. He simply said that he could see no harm in it, but doubted the wisdom of doing it.—ED.

CALIFORNIA ECHOES BY J. H. MARTIN.

DOOLITTLE SCORED AGAIN; JOKE DEPARTMENT IN BEE JOURNALS.

The moving of bees to pastures new still continues. We learn that J. F. McIntyre has moved 200 colonies to the alfalfa fields of Bakersfield. We hope the results will be highly successful.

Mr. E. Hart, of Pasadena, on March 25th reported the first swarm of the season. The gentleman's bees are within the city limits of Pasadena, surrounded by peach, apricot, and orange orchards. Quite a fair yield is expected from the latter. Mr. Hart will move his bees to the river bottom as soon as the orange blossoms fail to give nectar. Mr. Hart is a very considerate bee-keeper. Should he keep his bees in their present location through the whole season he would have an immense amount of trouble from those who dry apricots and peaches extensively in his vicinity. By moving his bees he works in harmony with his fruit-growing neighbors, and that is the way all good bee-keepers should do.

I believe that Wilkin-cistern affair you set going the rounds of the bee-papers is a good joke on you, Mr. Editor. You will find that the honey is put into that fire-proof concrete cistern, or cellar, in five-gallon tin cans in the good old orderly orthodox way. [You ought to have kept still and saved me this humiliation.—ED.]

I saw Mr. C. A. Hatch, to-day, and said, "Mr. Hatch, suppose you were dealing in

literature has got to stop. I don't see what this world is coming to, any way.

Mr. W. T. Richardson, of Ventura Co., after disposing of his 60-ton crop of honey, and finding that he would get no honey this year, has gone east, accompanied by his wife. He will spend several months with friends in the New England States. Mr. Richardson is not enjoying good health; and it is hoped that the journey, and the rest from the busy cares of a busy life, will have a beneficial effect.



COMB-HONEY SHIPPING-CRATE.

Getting Combs Well Attached to Sections ; Bottom Starters Emphatically Indorsed.

BY R. C. AIKIN.

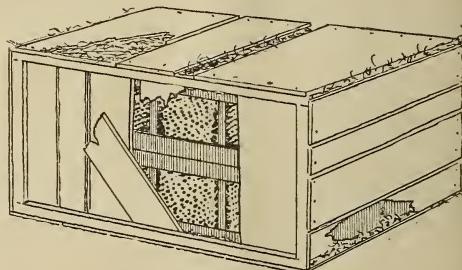
I observe that a very large crate for comb honey is advised. The idea is to crate 100 to 200 pounds or more in one big crate, and put handles or some sort of lug or projection on so that two men can handle by taking hold one at each end or side. Such a crate has never seemed to me to be what we want. I think if I were a freight-handler I would lose my patience when I came to handling such a clumsy affair. How is it with our extracted-honey packages? I can pick up one 60-pound can and put it where I want it, and do it with comparative ease; but the two cans in a box make a package that is a back-breaker. I can, and sometimes do, pick up a box of two 60-pound cans, and carry or load and unload it, but usually at the cost of backache. I have seen the time when I would have gloried in handling a package of 100 to 200 weight; but now that I know the folly of such things, I want to save my own and others' weak backs, and also make it easy for those whose backs are yet good to do their work without the necessity of breaking them.

It is claimed that the big crates will, because of their size and weight, be handled always by two men, picking them up and carrying them instead of throwing or tumbling. I think I should be tempted to tumble the big thing over and over if a helper were not at hand, while with a small package I would pick it up and transfer it to where I wanted it. I think others would do likewise.

I once moved eight tons of comb honey. It was all cased in 24-section cases—double-tier. I was loading a car about $\frac{1}{3}$ mile from the honey-house. I backed a one-horse express wagon up to the honey-house door, picked up the cases one at a time, walked to the door and gave them a push, shoving or sliding them into the wagon. The first ones in I sent

sliding forward so as to fill the front without having to get in to carry them forward. I would load from 800 to 1000 pounds at each trip, putting the most of it on the wagon without having to get in. I would then drive to the car, and unload by setting them one by one into the car to pack while I went for another load. In this way I loaded at the honey-house, and unloaded at the car, the entire eight tons in less than ten hours. The package that will be handled with ease, rapidity, and (it seems to me) with the greatest safety, is one that one man can pick up and carry without any heavy strain.

I have devised a crate for comb honey that seems to me an improvement on any thing I have seen in that line. My object was to combine lightness and cheapness in construction, a size that would make it easy to handle by one man, and so constructed that it would always be carried and set with the sections on edge. It would be very hard to describe it so as to make it all plain, so I have asked the editor to have it illustrated.



Look at the engraving, and you will see that the crate is made in a very simple manner. Four of the faces are smooth—that is, the boards are nailed on the outside. The other two faces have the boards nailed on the *inside*, thus forming a sort of panel on these two sides. These panels form a very convenient handhold so that it is very easy to pick it up by clasping a hand on each side with the fingers under the rim, very much as a hive, super, or case is picked up by inserting the finger-tips in the notches in each end. If you attempt to pick it up with either of the two paneled sides next to you, there is only the smooth boards to hold to; hence you would, 99 times out of 100, pick it up with a hand in each panel.

Now, if this arrangement will cause the crates to be picked up uniformly, as described, then if the sections are put in so as to run parallel with the paneled sides, that insures that they will always stand on *edge*. A section is safe so long as it is on edge, no matter which edge is up. There are only six positions in which it can be placed, and four of these are safe. The crate is designed to hold two cases, making a 50 to 60 pound package, but may be larger or smaller. It is also a little larger inside than the outside of the case, the extra space (an inch or so) to be filled with excelsior, crumpled papers, shavings, straw, or other material that will cushion.

I assume, of course, that the matter of convenience in laying hold of the crate insures almost to a certainty that it will be picked up, carried, and set down right. If this be true, the probabilities are that, in the majority of cases, it will be set in a car with sections parallel with the car, because a man will walk toward the car end and set it down when looking in that direction. Thus, while it does not insure against setting sections side foremost, it very much lessens such danger.

I have not shipped very much in this way, though what I have shipped has gone safely. I have always worked the home market largely, and ship but little by local freight.

The question of cost naturally comes up. The crates can be made very cheaply, and also very light. The poorest grades of lumber can be put into them. Those who are shipping small lots of sections to retailers can use these crates over and over again as egg-cases, milk-cans, and such are used, having them returned at a trifling cost. I am not prepared to say just what such charges are, for I have not had much experience in that line, though I think for short distances the usual charge is 5 cents each, probably less where quite a number are returned, or possibly where a number are in one shipment, at a minimum charge of 25 cts.

POOR ATTACHMENTS OF COMB TO THE SECTION, AND WHY.

There is some question, perhaps, as to the real need of such a crate. I believe it possible to produce section honey so perfect as to ship without such care-taking. If the comb be attached firmly to two sides of the section, it requires a hard rap to loosen it from the wood. Two causes—possibly three—give poor attachment to the sections. The two principal causes are slow flows and weak colonies. Even strong colonies will do poor work in slow flows. Then, too, if the partly filled super be raised and the empty put beneath, one may give too much room, and so have none of the sections properly filled. If the colony starts a super, and the flow stops before it is finished, the attachment will be weak. One of the most important points to be guarded in producing section honey is to have no more sections on than can be properly worked. A close watch should be kept on the strength of the flow; and, if weak, add room at the top by putting the fresh super over, not under, the full one.

Full sheets of foundation are apt to induce the colony to start more comb than they can properly fill, and, if so, will not build properly to the wood. Could I judge accurately, and know just how many sections would be needed, I should want the last ones on to have narrow starters only. The bee is loath to start new comb when there seems little prospect of its being filled; so if the flow is "tapering off" they prefer to edge in around combs already built and filled; so in such a case, with starters only to work on, they were led to fill out plump to the wood of the section. Full sheets in the sections act on the same principle as ready-made comb, though in a less degree.

One of the very best things to insure attach-

ment at the bottom is a bottom starter. I notice occasionally some one condemns them; but I have not seen any thing in print yet that I counted as a reasonable argument or any thing like conclusive evidence against them. I think in this journal, at least somewhere, I saw some one objecting to them because the bees built upward from them instead of going to the top to begin. One or both of two things are wrong in such a case; the colony is too weak to occupy the super, or the flow is too light. Usually the former is the true cause of the upward building.

Some object because the starter falls over or is gnawed out. I have very little trouble with either. The starter should not be over $\frac{3}{8}$ high. I sometimes cut them about $\frac{3}{8}$, then in putting on with a hot plate a part is melted off so that about $\frac{1}{4}$ inch is all that is left. A quarter-inch is better than $\frac{1}{2}$, because less liable to lie down; yet it is almost as sure to cause attachment or building down to the comb. From $\frac{1}{8}$ to $\frac{1}{4}$ is high enough when the starter is on, though the wider one is much more easy to handle in putting on. I make no pretense to having the top starter or sheet come close down to the bottom one. The line of wax on the bottom, even though but $\frac{1}{8}$ high, seems all that is necessary to induce the bees to join the comb down to it.

A starter will seldom be cut out entirely unless it falls over, and even then the waxy line serves the purpose. If supers be left on long, and no honey coming in, they will trim down the starters quite frequently; but the fact that they will cut out more or less top starters under such conditions proves the weakness of the argument. I would not think of leaving out bottom starters if the honey were to be shipped. For one's own table, and to some extent for home trade, the bottom starter is useless; but since it does not cost much to put it on, a good plan is to put it there and get a better-finished section. I know it will do it.

Come to my honey-room and I can show you a large per cent of sections better attached at the bottom than at the sides. I have even had some better attached at the bottom than the top, caused by too few bees and too little honey. I have now in my honey-room sections that I believe would stand almost any knocking about, almost to the point of breaking the case, except when the weather is very cold. At least, I feel sure they would stand all bumps in a freight-car coming against them edgewise. Bottom starters are a *good thing*, and side starters would be a further improvement.

Since writing the foregoing I have interviewed our railroad agent about returning shipping-cases. He says egg-cases are returned by express at 5 cents each, and by freight at fourth-class rate from point of shipment. Between here and Denver the minimum charge is 25 cents, no shipment being received for less. The rate per 100 pounds is 27 cents, so you see that I could have crates returned from Denver at a cost of 25 cents for any number up to almost a hundred pounds, a hundred-pound shipment costing only 27

cents. As the crates can be made at from 5 to 8 pounds each, they could be returned from Denver—56 miles—at about 2 cents each, providing enough are sent at one time to make a 100 pound shipment.

Loveland, Col.

[Friend Aikin sent two crates showing his manner of putting up the shipping-cases of honey, and I had our artist make drawings of one of them. There are many things in its favor. But there are two objections that occur to me, one of which is already referred to by friend Aikin himself; namely, the extra cost of the several smaller crates as compared with one large one holding the same capacity; and then, too, I am a little doubtful about commission men returning them as "empties." Would they not be apt to dump them on the general pile of refuse boxes and shipping-crates? Still again, there has been no complaint that the large shipping-crates holding 200 lbs. were too unwieldy to handle. While 50 lbs. is all *one* man can conveniently lift, yet two such men can more easily pick up 200 lbs. if it has convenient handles.

With regard to getting combs well filled out to the wood, friend Aikin knows what he is talking about, for the samples of combs he sent are evidence in that direction.

The only trouble that I have had with bottom starters was their curling over, and I believe I so reported it in GLEANINGS. I did find, however, that, when they are only $\frac{1}{4}$ or $\frac{3}{8}$, they would answer the purpose quite as well, and no curling.—ED.]



FACING COMB HONEY.

A Bit of History; a Rejoinder.

BY G. M. DOOLITTLE.

Yes, Mr. Editor, Doolittle does care to say a little more on that subject of "facing comb honey," for it seems to me that all the ideas advanced have failed to take in the conditions to which the older bee-keepers were accustomed. Bringing up has much to do with the way a person looks at a matter; and while much of the instruction that is given at the time when "as the twig is bent the tree's inclined," may not be just as it might be, yet it has its bearing in all future life. So let us go back over the past a little and see which was right—the past notions or those of the present. In the early fifties my father took all of his honey in boxes holding from 15 to 25 pounds. He sold those boxes as they came from the hive, good honey, fair and poor, all mixed together, as the bees left it, sometimes selling his whole crop to one man. Was there any thing wrong in that? Present arguments, put forth by the non-facing side, would have made him cut that honey all out, sort it, put a

little the poorest on the upper side, and take what each grade would bring, or else the transaction would have been a *dishonest* one. Father's first boxes were made with no glass in them; but he wished to know when the bees commenced work therein, and also see when they were completed, so he bored a two-inch hole in one side, put a glass on the inside and a "button" on the out, and, by turning the button, he could see what was going on inside, at any time. Later on, glass was put on the honey so that the "railroad smashers" would handle it with care when it was being shipped; and glass, so as to make each shipping-crate a "show-case," is of recent origin. Was the old-time method to be censured, or the present? Which?

Next came the "quarter" or six-pound box, with glass sides, or with corner posts and four glass sides. These latter were styled "glass boxes," and brought from one to three cents per pound more in market than did the former; but when sent to market the *whole* crop was put together—good, bad, and indifferent, and the whole sold at *one* price, "taking the whole crop." Present arguments say, "Sort that honey or you will be dishonest." Are they right?

Next came the two-pound sections, in the early seventies. Doolittle has his *whole* crop off—white clover, basswood, mustard, and buckwheat. He takes a fair sample of the lot to a buyer, and sells it for 28½ cents per pound. Having the average before the buyer, Doolittle asks, "How shall I crate it?" Reply, "Put an average in each crate, then each one to whom I sell will get an average of the whole crop, the same as I bought it." I think I see lots of Miller's, Hasty's, Snyder's, Whitney's, and Thompson's hands up in "holy horror" of the *sin* being committed when I add the other part of the instruction given, "and face it up with the nicest and whitest you can find in the average for one crate." But, gentlemen, remember that, about the first rules for grading honey were passed in 1891 by the North American Bee Convention in its session at Albany, N. Y.; and Bee-keepers were the *main* movers in this thing, to their own loss, as honey has "tumbled" ever since. Buyer sold the crop of honey alluded to last, at 35 cents per pound, distributing it in many of the cities of the East; and both by letter and personally have I been told by bee-keepers about seeing said honey in some one of the cities, but not one of them thought aught but that it was honestly put up; or if they did, they did not manifest it by saying so. No, this dishonesty part is of recent origin, and originated in the idea that any man is dishonest who would attempt to sell his crop of honey as a whole, without sorting or grading it. A little incident:

A neighbor did all of his wool up with the dark or outside ends of the fleece out (as Thompson would have us do with our honey, if we would be honest). I went with a buyer to see the wool. He would offer the man only two-thirds the price for this wool that he did for other fleeces which were done up with the whitest and nicest side out. He did not buy

it; and when we were alone I asked him if the wool was not just as good done up in this way. After some words regarding the folly of the man who put it up, he said, "Of course it is just as good, but no one would buy it of me put up in that way, for that is not the way those who buy want it, from the manufacturer down." Yet some of our modern bee-keepers would have the farmer separate each fleece of wool into three or four parts, putting each grade by itself, and the poorest of each grade on the outside, that he might be *honest* in the sight of God and men, and seem to rejoice at Hasty's "throwing" fire and brimstone at me, because I think there is nothing wrong in the farmer putting up his wool in "the good old way," or sending his product of honey to market, as I was instructed to, during nearly all of the first half of my bee-keeping life. I was informed that those retailing that 28½-cent honey of mine "sorted" it, as all retailers used to expect to do, and sold the fancy at 50 cts. per pound, and other parts at 45, 40, and 35 cts., without a thought that some one was trying to cheat them by putting up the average of the crop in each crate. And retailers would be doing the same thing to-day had not bee-keepers pushed something that was against their own interests, and then denounced the one who did not "dance when they piped." From this selling honey from sample, or by the buyers looking over my whole "pile," came the part in my article regarding "*every case alike*" which all seem to have overlooked when they "jumped on to me." If Doolittle had desired to be dishonest he would not have put that in. By doing that he told the world plainly that he considered the commission man "proxy" for the raiser; and in showing any customer the contents of one case, he knew what was in *every* case, and, thus knowing, he was to sell "to the best advantage of the consignor," and the buyer was to make his own "*grading*" of the "*average*" product as he thought was to his best advantage. No secret mark on such honey, Bro. Whitney to the contrary notwithstanding. The X's are put on only where honey is assorted; and this, so that, when the finally crated pile is finished, each case can be told from the other by looking in the handholes; for I have told you before that few men can carry in their "*eye*" grades of honey very nearly alike, unless the two cases are set side by side.

It seems to me that the whole matter of this controversy hinges on whether a bee-keeper may sell his crop as a *whole*, or whether he must grade it. Formerly I sold my crop as a whole; but of late years the "mad rush" of the grading faction has compelled me to grade it. I am still firm in the conviction that, had no grading been entered into by bee-keepers, but an average put in each case, we should have gotten more for our product with less labor. But as this "rush" was made, I was led to say that I doubted the wisdom of trying to sell honey as formerly (white on outside of cases, then XX, X, or buckwheat in the center), but considered there was nothing *dishon-*

est in doing that way. And now, after having put the various sides before the readers of GLEANINGS, I will close by saying that, if any thing I have written in this matter has given offense to any, I am sorry; for I have no other object in life than to do and advocate that which is right.

Borodino, N. Y.

[While I am still feminist Doolittle, I deem it only fair to keep mum. If the other fellows want to give him some more "fire and brimstone," let them do it in some other journal. While they can't and wouldn't assail his honesty, yet, if given a chance, they might brimstone his logic.—ED.]

CHALON FOWLS.

The Man who Realizes Double Prices on His Honey.

[I take pleasure in introducing to you one of the most progressive and thoroughgoing bee-keepers in the United States—Mr. Chalon Fowls, of Oberlin, O. Away back in the early '80's, when I was tugging away at Greek and Latin at Oberlin College, Mr. F. would occasionally visit me at my room. At that time he had a bad case of bee-fever, and, flushed with success, he was literally chock full of bee-lore, and of plans for the future.



CHALON FOWLS.

He had a small farm, and the neighbors made fun of him because one year he left his wheat unshocked in the field, and "fussed with the bees." But later on, when they found that he was making, off from those same hives, a clear profit of thirty dollars per hive,* they changed their tune.

*He can't make that much now at present prices.—ED.

The upshot of the whole matter was that Fowls gave up farming, moved to town, and has joined the ranks of a class of bee-keepers who are few in numbers, and far between; namely, specialists—that is to say, those whose *whole means of livelihood* comes entirely from the bee-business.

But Mr. Fowls' specialty, in his specialty of keeping bees, is selling honey at about double the prices bee-keepers generally secure. He has already explained how he does this, on page 152 of GLEANINGS for March 1st, last year, and he has something more to say on that same point.

Out of the material that he furnished me for a write-up, I have selected the following, giving it in his own words.—ED.]

With varying fortune the bees have always paid better than farming, as a rule. I generally kept from 60 to 100 colonies until about three years ago, when, owing to continued ill health, I gave up farming altogether and bought 50 colonies more of bees. Since then I have made it my exclusive business. Two years ago it was a rather poor season here, and I raised 5600 lbs. of honey from 125 colonies, spring count—1200 lbs. comb and the rest extracted. The comb sold at an average of nearly 14 cents, and the extracted at 10 cents.

Last season's crop was a fair one, but not of the largest, as the drouth struck us in July, so we got nothing after the first week. We had 8000 lbs. from 136 colonies, spring count—2000 lbs. comb, the rest extracted, and all but 400 lbs. choice white-clover honey. The comb sold at an average of 12 cents; the extracted at nearly 10. My comb honey is raised without separators, on full sheets of foundation, and always brings the top price. The extracted honey is ripened on the hive, and always weighs 12 pounds or more to the gallon, and is nearly all sold in my own and adjoining towns. I now have 175 colonies in three apiaries. My main help is my oldest daughter, Violet. Through the swarming season my wife helps in the home apiary. My bees wintered well. I have lost only two colonies up to date—one by starvation and one by queenlessness.

I want to call your attention to the prices I get for my extracted honey. I described my methods of marketing in GLEANINGS about a year ago. As my article was copied in the A.B.J., I concluded it must have attracted considerable notice. At any rate, it was criticised in an article by Mr. McKnight, of Canada, at the time. As I was very busy I paid no attention to what he said. Among other things he said that very much honey could not be sold at the price I mentioned. Well, "the proof of the pudding is in the eating." My last season's crop of extracted honey, 6000 lbs., has been sold, nearly all in my home market (that is, my own and neighboring towns), at but a slight reduction on those prices. It is a significant fact that in Elyria, a town of about 10,000, *every one* of the grocers handles my extracted honey, paying cash on delivery, and they will not buy of others, even when offered at a lower price. Now, I submit it to you if

there can be any thing very far wrong in my methods of marketing when I can get nearly double the prices for my crop that some others do. I imagine my family would fare pretty poorly if my honey brought only half as much, as we have no other income excepting the small amount derived from the sale of bee-keepers' supplies to our neighbors.

THE LATEST GOLDEN SECTION-CLEANER.

Why the Belt Machine is Better than one using a Solid Disk.

BY J. A. GOLDEN.

In presenting my section-cleaner to the public I did not expect it to be understood that an old sewing-machine was the only way in which a machine could be made. That old machine being my first idea of a cleaner, I used it to illustrate how a machine could be made, first, by a revolving wheel faced by gluing sandpaper on it, and operated by foot power, by which over 1000 sections were beautifully cleaned, and by only the one coating of sandpaper.

There was one thing overlooked when writing my former article, which is in regard to propolis sticking or gumming up the sand-belt. I will here state that, if a section contains much propolis, when soft and sticky, or honey is on the section, it is almost sure to stick on the belt or wheel; at least, that was my finding; and when I lifted sections from the crates I would take my old knife and shear off any bulky particles, if there were any; but as I use nothing but a bee-space over my crates, I am seldom bothered with an overplus of propolis; then if I want to dress some sections I set that amount in our cellar, sometimes over night, and dress in the morning; then there need be no fears as to gumming the belt. But I want to say there is much in how a section is held on the sand-belt or wheel. If it is held crosswise of the grain of the wood there is but little danger of gumming or sticking if using No. 3 sandpaper; then turn the section, merely touching the revolving wheel or belt; thus a better polish is secured. However, one must be careful not to press too hard, for the sandpaper would soon cut the section through at the corners. In using the wheel, one must be very careful when applying a section to any revolving solid substance, or the delicate comb will receive a jar that will crack it unobserved; but you would find it later on when handling your honey; but by being careful the wheel does grand work, and beats hand scraping a thousand times over. This unnoticed cracking of the comb was what led me to devise the belt arrangement, of which this cut will fully explain its adaptability to the cleaning of section honey; and no fears need be entertained as to cracking the delicate comb in any shape or form; and I am satisfied that three times, at least, more work can be accomplished with the belt device over that of the wheel.

Some one may say, "How can that be?"

Well, I'll tell you. If you use a solid surface you must take pains in pushing your section over the wheel or you will see it jump and tremble; then look out for a cracked comb; but if you are cautious it will be all right; but with the belt you may pick up a section, clasp it between both hands, and dab it down on the flat surface between the wheels or rollers crosswise, and the belt gives under its light pressure, and no jar is perceptible; but a forward pulling is observed when the belt is revolving briskly; but, don't hold the section there more than long enough to merely touch, or it will have to be put with the unmarketable honey. Thus the four sides and edges can be gone over while one side is cleaned by a solid surface if pretty badly stuck up with propolis, or that's my experience with the two machines. They can be constructed of a simple form, thus fitting them up at a price that no bee-keeper could afford to do without one; for the time has come when, as Mr. Root says, the future market will demand a box entirely clear of stain and propolis, which only voices the views of Batterson & Son, Buffalo. I here quote an extract from a letter received a few days ago. After complimenting us on the cleaner the writer says it is a fact that honey-sections must be clean and bright, or we can not begin to obtain the market value for the honey, even if it is choice. Now, after such prediction, coming from such authority as the above, would it not be wisdom for bee-keepers to consider the problem presented to them, especially when contemplating the shipping of honey to the city markets? I could give quite a number of extracts from letters just received from prominent bee-keepers and dealers in honey; but the above should be sufficient.

Reinersville, O., Feb. 16.

[Almost simultaneously with the reception of the article above I received another one regarding the same machine, from Miss Fitch, who is the expert operator of the section-cleaners, and who, I understand, is a young lady whose parents have been near neighbors of Mr. Golden for years, and who has helped Mr. Golden in his work among the bees.

With regard to the machine itself, I will state that we have it here now in our shop; but owing to the fact that the bearings are of wood, and the driving mechanism of wood, it runs rather harder than it ought to. But this difficulty can be easily overcome by making certain parts of metal, and otherwise strengthening up the frame and the treadle motion.—ED.]

models, and we are confident the Eureka will prove the most satisfactory in every respect. It is easy to operate, and does the work very satisfactorily. However, it is not best to have the belt too tight, and one can govern this to suit by pressing on the section as the case requires. The machine surely will be welcomed by the women-folks and grandpas who have to clean sections by the old method of scrape, scrape, scrape.

We have received many letters in the past three weeks, inquiring what the machine will cost. All say they will want a machine, so you see the young bee-keepers believe in progress; and it won't be very long, Mr. Editor, before it will be said by all bee-keepers



MISS FLORA FITCH.

all over the land, that the belt section-cleaner is one of the greatest blessings the bee-keeper has, as it is a great labor-saving device; and not only so but the apiarist can put his honey on the market in a perfectly clean section.

Now as to cleaning propolis from sections, we have set old sections in a warm room until the propolis has become soft and sticky, and, when applied to the cleaner, they would stick to the belt; but when the heavy portions were removed with a knife the sections were quickly cleaned without any gumming of the belt. But if a section has any honey on its surface, and is applied to the belt, it will gum it.

All bee-keepers know there is a great difference in propolis; some kinds seem to become brittle as soon as the air strikes them, even in the warmest weather, while other kinds remain soft and tough until quite cool.

Last season, when taking off honey, i. e., when lifting the sections from the crates, we usually clipped off any clumps of propolis with an old knife; and if some honey was wanted we would set a crate in the cellar over night and clean them in the morning, when we were never troubled by the belt gumming. However, after the season closes and the propolis becomes hard, by using coarse sand-belt revolving at a high speed, holding the section crosswise of the grain of the wood, there is no

THE GOLDEN EUREKA SECTION-CLEANER.

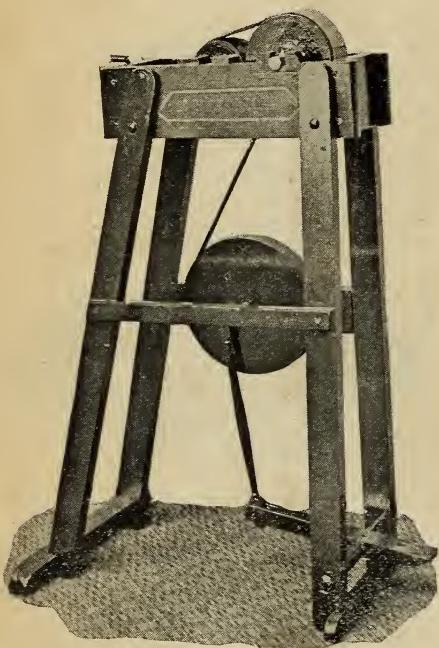
Does Soft Propolis Gum Up the Belt?

BY FLORA FITCH.

Mr. Root:—We ship you to-day our latest and best model of section-cleaning machine, the Eureka. Mr. Golden has made and thoroughly tested four machines of different

danger of the belt getting gummed up—at least that has been our experience, and we have cleaned hundreds of sections, all of which looked, after cleaning, as though there had never been propolis or stain on them; and that honey sold right at home for fifteen cents per section, while much other honey went begging, and is begging yet.

So, Mr. Root, when the machine arrives we shipped to you, get some sections containing propolis on them (not great hunks, though), and set them in a warm room until they are warm; then apply them as I have stated, with the belt revolving at a good speed; and if there is any gumming of the belt, please tell the bee-keepers all about it.



GOLDEN'S LATEST SECTION-CLEANER.

Why do we talk about cleaning sections when the propolis is soft and sticky? We always preferred propolis hardened before cleaning. I believe it was Dr. Miller who, in GLEANINGS two or three years ago, said he preferred propolis to become hard before cleaning; that he did not like the sticky stuff, and that's about the way we look at it.

There, Mr. Editor, I shall expect to hear you say that you are sorry you ever solicited a further acquaintance with the writer in the pages of GLEANINGS; but I am sorry Mr. Rambler (page 249) has requested you to stop his paper. But tell him to sing that little song he composed for Alfaretta:

The night is stormy and dark;
My lover is on the sea;
Oh! let me to the night winds hark,
And hear what they say to me.

Then I think he will order his paper continued.

THE T VS. THE IDEAL SUPER.

A General Discussion of the Features of Both; Tall Sections, and the Editor's Opinion of them Misquoted; is it Desirable to have Comb firmly Attached to the Wood of the Sections?

BY DR. C. C. MILLER.

I've got one of those Ideal supers, and it mixes me all up. For years I've been looking for something better than a T super. The editor of a certain bee-journal has more than once hinted very broadly that there was something out of whack in my thinking machinery because I couldn't see the great superiority of the section-holder. And I've thought that, if he'd handle a lot of T supers for a single season as they ought to be handled, he might change his tune. First he believed in wide frames—wide frames with top-bar, bottom-bar, end-bar. For a time, if I'm not mistaken, he believed in T supers, and then he went back to wide frames just a step nearer T supers than the old wide frames by leaving off the top-bar, and called them section-holders. Now he's gone another step toward the T super, left off the end-bar, and dubs it Ideal. If he'll go still another step and leave off the bottom-bar, perhaps he'll stand square in line with me.

Honest Injun, however, if I had to start all over I'd want to do some thinking and some testing before I'd decide whether I'd use the Ideal or the T. If fences are to be used, I'm a little inclined to the opinion that the Ideal has the best of it. The difference in depth, making the Ideal use the tall section, is a matter aside, for the Ideal could be made shallower, and the T can be made deeper. But that reminds me that it's a little queer how some of your ideas, Mr. Editor, have got mixed up in traveling north. You are represented as claiming that the tall section is better filled out than the square one, and that there will be fewer pop-holes because the comb comes out nearer the surface. Well, don't get mad. It's good training for you. It's the old story of the boy and his bull-pup. He asked his father to get down on all fours and play he was a big dog. When he did so the pup grabbed him promptly by the ear, and held on after the manner of his kind, and the old gentleman called lustily for the boy to take him off. "Bear it, father, bear it," said the boy, "it's the makin' o' the pup." But in this case it may be the "makin'" of you instead of the p—the people who worry you.

As compared with section-holders, it seems to me the Ideal is a distinct forward step, fence or no fence. The only loss in making the change, if it can be called a loss, is that the outside row of sections can't be jumped to the middle, and vice versa. But to those practical bee-keepers who considered this only an advantage in theory—one of those advantages that didn't pan out in practice, that loss can be sustained without tears. Instead of the topless wide frame, it is hard to believe it is not a material improvement to substitute the less expensive plain stick or bottom-bar.

Filling up with sections is probably about the same in one case as another; and when it comes to emptying, the advantage ought to be on the side of the Ideal.

Compared with the T super, the Ideal has the advantage that the sections fit close together, instead of having a space between them made by the upright of the T tin. Whatever the space made at the bottom of the sections by this upright, there will be the same space at the top, a space so large that, to have the sections square, and keep out propolis, it is necessary to use small sticks $\frac{1}{4}$ inch wide and less than $\frac{1}{8}$ thick. That makes three extra pieces that can be dispensed with by using the Ideal. True, they are small and inexpensive, but it takes time to handle them.

The T super can probably be filled more rapidly, for with the proper arrangement it is probably the best of all surplus-arrangements for filling. In emptying the super, the Ideal ought to have the advantage.

As to cleaning, the T tins must be pitted against the bottom-bars, and they have a pretty big advantage. You can dump a lot of T tins in hot lye, and clean them in a twinkling by wholesale, but you must make slow work of cleaning the wooden bars.

If fences are to be used, and if it is desirable to have the separators come to the tops of the sections, and if it is important to have free communication between the upper corner of one section and the upper corner of the next, for the purpose of preventing pop-holes, then the Ideal has undisputed possession of the field, in all probability, for that rules out the use of the little sticks in the T super—a blow too heavy for the T super to sustain.

Of course, actual trial on the hives might make some change of view; but as the matter looks now, if plain sections and fences are to be used, then the Ideal is probably the best super for one to get who hasn't all the supers he needs.

There is one thing that puzzles me greatly in the discussion with regard to plain sections and fences. It can hardly have faded from the memory that much time was spent in trying to settle upon a proper system of grading. Views were by no means always alike; but in all cases there was agreement that having the comb firmly attached to the wood was a desirable thing. To get a section without pop-holes, with all the cells next the wood sealed, was admitted on all hands to be a difficult thing to be obtained, such filling out and sealing entitling to a higher grade. No one hinted a thing against its desirability. Now when fences and plain sections come forward with the claim that they can solve the problem and produce what has been so much desired, up rise those who say that it is better to have something not filled out so well. In the name of all that's reasonable, why didn't they tell us that before, and not allow so much effort to be wasted in seeking a thing not worth the seeking? Why was the Washington grading, making the firm fastening of the comb to the wood one of the distinctions (if not the chief distinction) of the highest grade, allowed to stand year after year at the head of the honey

quotations, with no voice raised in protest? Why, oh! why?

Marengo, Ill.

[I really do not know why I should have been made to entertain opinions regarding the tall sections that I never held. For instance, I have been criticised for saying that the tall section would be better filled out than the square one. Mr. Francis Danzenbaker may have given expression to something similar; but I feel sure that I have never said just that thing, nor any thing like it, for I never believed, and do not now think, that, other things being equal, the shape of the box, within reasonable limits, has any thing to do with filling on the part of the bees. I have quoted the opinions of others; for instance, at the beginning of the year I said, referring to the tall sections: "It is argued that they look more symmetrical." . . . "It is argued also that a tall box of honey standing right opposite a square one, of the same superficial surface and weight, appears to be larger. Whether these advantages are apparent or real, it is certainly true in some markets, at least (not all), notably in the East, that the tall sections sell more readily." It will be noticed I said, "It is argued." Now, my own opinion is not here given. I simply set forth the opinions of others, and let them stand for what they are worth. And, again, on page 519, GLEANINGS for 1897, Mr. B. F. Onderdonk, referring to the fact that Capt. Hetherington had ordered 50,000 cartons for tall sections, says: "When I see the Danzenbaker section filled solid to the wood all round—sides, top, and bottom, while my $4\frac{1}{4}$ sections have passageways through each lower corner, and even the whole bottom open, I feel a Christian regret for the experts, and rather hope to die an amateur."

Now, this is what I said in reply:

Whether this difference was owing to the fact that the 4×5 looked larger by *contrast* than the square ones, and therefore brought more money, or whether the oblong shape is really more desirable, even when alone, is hard to say. If the 4×5 sells at a higher price because of the more pleasing contrast, then when the square sections are crowded out of the market I am of the opinion that the 4×5 would seek the same level in price as the 4×4 .

To quote the opinion of others regarding the value of a certain thing is legitimate and proper. To set one's own opinion up to a high notch respecting something with which the writer has never had any practical experience, is silly.

Perhaps it may seem as if I were taking a good deal of space to set myself right; but I have been so frequently and persistently misquoted on some of these things that I deem it only fair to explain myself; and yet let me say that I cherish no ill will toward those who have gotten a wrong impression from what I have written.

Regarding the Ideal super, all I have to say is this: Essentially the same thing is used by Miles Morton, of Groton, N. Y. When he tests a thing, and says it is good, I feel almost like drawing the conclusion that it is good. However, the Ideal super is something that has not been tried yet by bee-keepers gener-

ally, and may not be the *ne plus ultra* in surplus arrangements—at least for the mass who earn at least a part of their bread and butter from the honey they raise.

In our shop we do a good deal of filling of T supers and Ideal supers; so that I believe I can speak with some degree of experience on this one point. Our girls will fill an Ideal in less time than they will a T super.

Your last paragraph, doctor, is a sort of poser. I did not suppose there would be any question at all as to the desirability of having the honey filled out solid to the section box all round, providing it could be done as easily as not. That even so progressive and strong a man as Doolittle should think otherwise, only convinces me that our best men can not all see alike. But, after all, the question simmers itself down to this: Will the *markets* pay more or less for honey having only partial attachments, and rounded off to the wood? My talk with commission men has led me to believe that they would pay two cents *more* for the plump filled-out sections, and that the other kind would have to take a second place.

—ED.]

NOTES OF TRAVEL AMONG BEE-KEEPERS OF YORK STATE.

At Frank Boomhower's, Gallupville, N. Y.; the Immense Buckwheat Acreage of Schoharie Co.; Yield of Buckwheat Honey per Colony.

BY ERNEST R. ROOT.

You will remember that I was last at Frank Boomhower's, watching him cutting glass for glassing sections. And that reminds me that I received a note from Mr. B., stating that I got the facts as to the method of cutting the glass all right except the diamond; that he never owned such a tool in all his life. Moreover that the tool I saw him using was one of those cheap things that cost only six cents, and which, in his estimation, was far ahead of any diamond ever made, for cutting glass.

Well, after I had spent a little time in the shop we went out to the apiary, at the rear of the house. Unlike most yards it was located on high ground, or, rather, terraces, one above another. Back of the house there was originally a very abrupt and steep hill; and as Mr. B. required more room for his bees he finally terraced it off, using loose stones for the walls, which are very plentiful in this part of York State.

Just at the base of the hill is a large pond supplying water for a millrace lower down. I obtained a photo (my "shots" were poor) that gives a fair view of the place, including the pond, or lakelet. The half-tone is not as distinct as I wish it might be, through a misunderstanding on the part of the engraver, who used his coarsest "screen," thinking that, perhaps, I desired to use the picture in an ordinary newspaper, using cheap ink and poor paper. But if you hold the view off at arm's length you will get a fair effect.

The main flight of the bees must be right across the pond. Remembering that we had

had some reports to the effect that there were heavy losses as a result of having an apiary close to a body of water, I asked Mr. B. if he had ever noticed the bees dropping down and dying in the water. "That talk," said he, "is all bosh. Beyond the fact that my bees go down to drink they never go near, much less drop into, the water, although they fly over it hundreds of times every day."

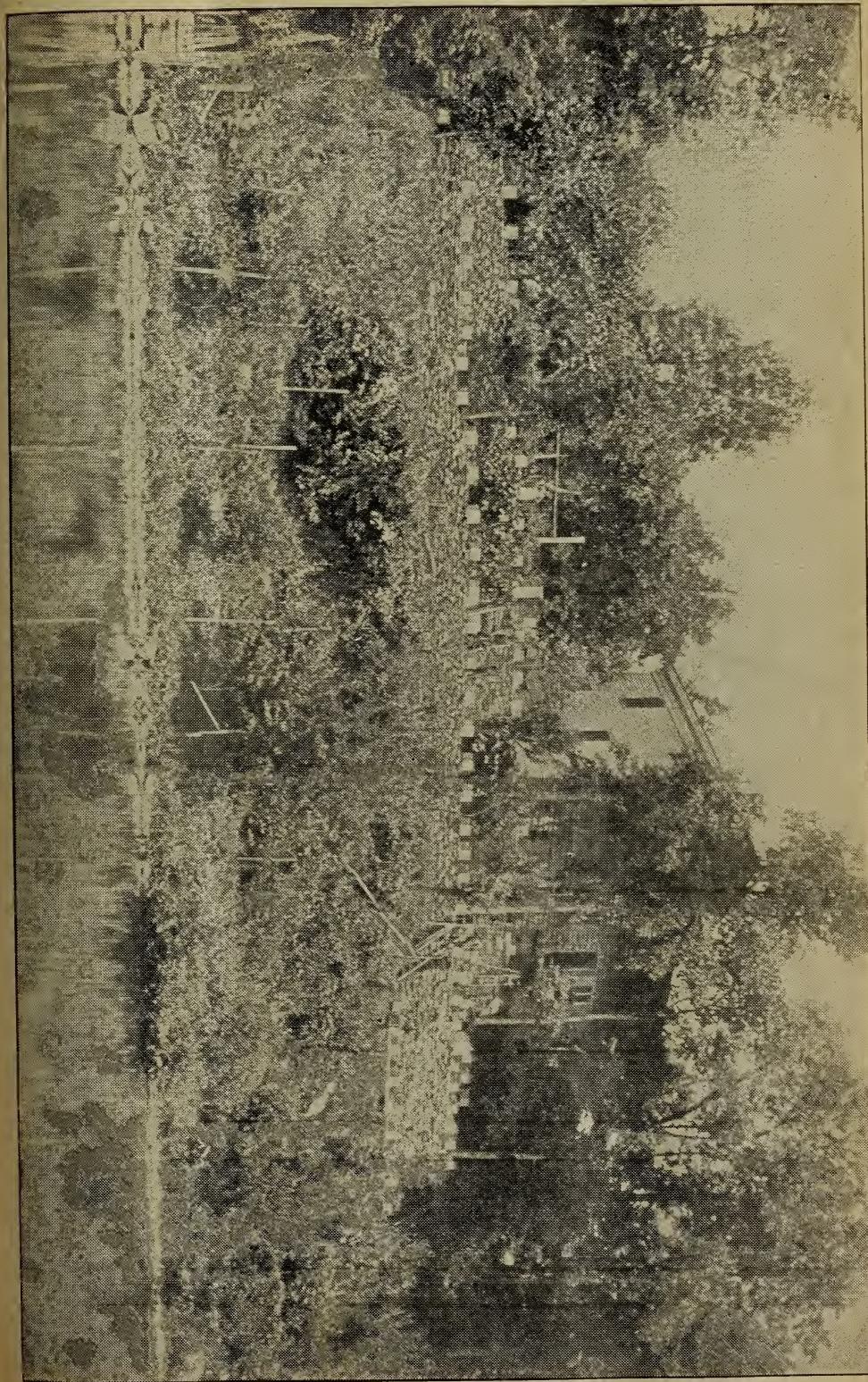
At the time I visited the yard the buckwheat season was just on the wane; but the supers were piled up one on top of the other, showing that a good flow from buckwheat had been secured. Indeed, this dark rich honey is the main dependence of Schoharie County, as it is also the most reliable.



NOVICE BOOMHOWER, ONE OF YORK STATE'S LIGHTNING OPERATORS.

The next day we took a drive out among the hills; and from an elevated position at almost any point could be seen thousands of acres of buckwheat. Most of the fields had been cut, and immense brown patches could be seen in the distance, five and even ten miles away on those big hills, in almost any direction one might look. From one hilltop alone, and within a range of three miles, I could see 5000 acres of buckwheat—at least, friend Boomhower said there was about that many. Indeed, I about came to the conclusion that farmers thereabout raised nothing but buckwheat—buckwheat here and there and everywhere. The soil and climate seem to be especially adapted to its growing; and as it is always a paying crop the farmers not only grow it, but keep bees. I had some curiosity to know the amount of grain annually raised, and wrote to friend B. some little time ago about it, and this is his reply :

APIARY OF FRANK BOOMOWER, GALLUPVILLE, N. Y.



Ernest:—Your letter is at hand inquiring about the buckwheat acreage of this vicinity. It would be impossible to give a near estimate; but I will give you the number of bushels handled at the several mills in this vicinity. Becker & Co., 75,000 bushels; Utman Bros., 50,000; Rickard & Co., 25,000, besides several smaller mills that handle all together about 25,000 more, besides thousands of bushels used up by farmers for feed and buckwheat cakes.

I have never kept an exact account of how much buckwheat honey we get on an average per colony. To give you a little idea of how it comes in when conditions are favorable, two seasons ago we extracted the yard all cl-an on Friday; finished up about two o'clock. On Monday following, all were full again. Most colonies had on two and three sets of supers, L-size (9 combs each). We weighed the honey from one colony, and got 46 lbs. This was the 13th of August, when buckwheat was in its prime. At this time, about 700 or 800 colonies were working the same territory. I could count from the bee-yard, which is not favorably located for a view, and within three-fourths mile were 100 fields of buckwheat, containing from 5 to 20 acres in each field. Last season, although not as favorable as some seasons, we got an average of 100 lbs. of extracted buckwheat per colony. This was at the out-yard which you visited when here, and about 500 or 600 colonies were working the territory.

Gallupville, N. Y., March 7. F. BOOMHOWER.

Mr. Boomhower has three sons. The eldest, Novice, I should think, was 23 or 24; and the next two, twins, 17 or 18. All three are expert bee-keepers. Novice is one of those "lightning operators" for which York State is famed. Indeed, I saw him go through an extracting yard at a rate of speed that made me think that we Westerners (or Easterners?) did not know much about handling bees rapidly; but, like his father, he seemed to be one of those careful, precise bee-keepers who not only work rapidly but who secure great results in honey.

WINTERING IN A DUGOUT.

Six Inches of Water in the Cellar an Advantage.

BY HARRY LATHROP.

Another spring finds us with our busy workers, the bees, removed from their winter quarters. From present appearances my bees have wintered well. I have to report the loss of but one colony out of ninety wintered in my dugout. All colonies outside, in double hives, are apparently all right, and all seem to be strong in bees.

There is one peculiarity of my bee-cellars, the one shown in the Picture Gallery of the last edition of the A. B. C. It is usually quite dry until toward spring; then when the break-up comes, the water will stand about six inches deep all over the bottom. This year it was that deep for four weeks previous to the time the bees were taken out. I have noticed that the bees are quieter after the water comes. This cellar has sand bottom, stone wall for sides, plank and dirt top, with a board roof over all. I have a large cellar under my dwelling at Monroe, Wis., which I arranged especially for wintering bees. It is well ventilated, and dry; but there is more dampness in hives wintered in it, and the combs are not in as good condition as those wintered in the old dugout.

HOW TO CLIP QUEENS.

The season for clipping queens will soon be here. As I have practiced clipping for years, and believe I can clip as rapidly and safely with no device but my fingers and the scissors as any one can by the use of any clipping-device, I will tell the readers of GLEANINGS how I operate. This is nothing new, but it may be of service to those who have yet to learn how.

The best time to clip queens is during the first real warm weather of spring before the colonies have become so populous as to make it difficult to find the individual. If queens are clipped only at the opening of the season one can easily keep a record of their ages, as queens to be clipped this year are always known to be of last year's rearing. But now to the work:

Having opened the hive, and quieted the bees with a little smoke if necessary, look carefully over the combs until you see the queen. Pick her up by the wings between the thumb and forefinger of the right hand; then transfer her to the left hand by grasping her legs between the thumb and finger. When your right hand is free, get hold of your sharp-pointed, keen-cutting scissors, which should be kept handy. Then, while holding the queen by the legs with your left hand, slip a point of the scissors under both wings on one side, and clip off about two-thirds of their length; release the queen on the combs, and let her run down. I have never seen any loss that arose from clipping queens. I would not think of trying to handle an apiary, especially one run for comb honey, in any other way. With clipped queens I allow natural swarming to take place; but there is no hustling round after runaway swarms, or climbing of trees. Having caged the queen when a swarm is issuing, the apiarist is master of the situation.

Brownstown, Wis.

HONEY REPORT.

We are having the largest saw-palmetto bloom I ever saw; but as we are having a severe drouth—no rain of any consequence since last December—the honey-flow is comparatively light; but the honey is thick, and can be extracted before it is sealed. We have just extracted twelve gallons from four colonies, and expect to extract two or three times more.

YOUNG G. LEE.

Glenoak, Fla., May 4.

BEE-KEEPING IN GEORGIA.

Bee-keeping is a long distance behind the times here in Georgia, and thousands of tons of honey and much wax go unmarketed, owing to the fact that our people have never realized their advantage in this direction. Here in southwest Georgia the gallberry is a certain surplus every year. It grows in and around the edges of the swamps, and is independent of weather conditions, while cotton and the cow-pea (or field-pea) give abundant stores for winter.

JAMES L. MONTGOMERY.
Americus, Ga., May 2.

MR. WHITE'S ARTICLE OF FEB. 15.

Acting with Intelligent Selfishness.

BY W. A. H. GILSTRAP.

Several points in the above article struck my fancy, and here goes for a bundle of comments.

In the first place, Mr. White appears to be honest, and wants others to be so, or at least act with intelligent selfishness. He makes some remarks which do not apply to the average California locality.

The honey of this country is mainly put up by specialists. All such ought to know when honey is ripe. An acquaintance who owns over 100 colonies of bees, and has main charge of nearly 200 more, told me he extracted as green as possible, and would be glad if he could extract before any of it could be sealed. I should be glad of the chance to weigh some of his honey, but I suppose it would weigh well over 11 pounds to the gallon. Our dry climate ripens honey very rapidly, unless the weather is cool enough to granulate it in the tank, or even in the hive, unless the hive is *very* tight. Then I am convinced that it is not common for bees to store honey as rapidly here as in the East. Your bees store perhaps over half as much in thirty days as ours do in one hundred. An apiary storing three pounds of alfalfa honey per day for each colony would be a good run. I have never been able to extract so much.

Your editorial question as to the advisability of getting the members of the U. S. B. K. U. to pledge themselves not to put honey on the market unless it is first ripened, has to meet two objections, either of which would be death to the proposition.

1. The producer, who is ignorant or dishonest enough, or both, to put inferior goods on the market is just the man who is not likely to even want to join the Union.

2. If he did sign the agreement he would not care to keep it.

When you get bit as thoroughly as the writer once was by several bee-keepers not trying to keep a written compact which they made with other bee-keepers, then you will know just what I mean.

A law of national application, requiring extracted honey to be reasonably well ripened, should do a good work. Nothing else can cover the ground, in my judgment. For the California producer to sell his honey in his nearest town, and run his perpetual-motion machine in his apiary, would both be good schemes if they would work. What honey I produced last season was sold to neighbors, retailed at a town 20 miles distant, shipped with other honey to Chicago, and sold to a dealer who sold some to a San Francisco firm, and the rest to a German exporter. Of the crop—over 18 tons—only a little remains for experiment. We *must* ship the bulk of our honey somewhere or quit keeping bees. As we ship to Germany, England, Scotland, and I don't know where else, it becomes an export, and is, therefore, not governed in price by U. S. tariff laws. We have been learning

honey production better than market-making. Comb honey sells better in our towns than extracted, partly because it granulates less. Of course, pure sage does not granulate. After my bees took such a fad for starvation and famine fever (which is not exactly starvation) I quit trying to produce sage, and now keep bees only in the valley. Many others have done the same.

At present I look for a failure of the mountain honey crop this year, with half a crop in the valley. This guess applies to Central California. Let Mr. Martin guess for the south end of the State.

I consigned several tons to Guggenheim & Co., of San Francisco, while there was no market here, as they were *well* recommended. Most of the honey brought me about $2\frac{1}{3}$ cts. to nearly $2\frac{1}{2}$ cts. About the time it sold, R. A. Burnett & Co. gave me $4\frac{1}{2}$ cts. at Chicago, which was almost exactly $3\frac{1}{4}$ cts. at Hanford. It was a part of the F. E. Brown honey you have so often referred to. Both lots were light amber, quality the same.

Caruthers, Cal.

[I was struck with your sentence, or clause, rather, "acting with intelligent selfishness." Mr. White is intelligently selfish enough to be strictly honest. He can see far enough ahead to know that deception, or putting out a poor grade of honey, while at the start may be more profitable, is in the end any thing but profitable. This kind of selfishness is the essence of real Christianity.

As to the matter of members of the U. S. B. K. U. pledging themselves to put on the market extracted honey of a certain specific gravity, I still believe if the Union were to make such a requirement it would do no harm, and might do a great deal of good. In the first place, it would set up a standard. Certainly the most representative and influential body of bee-keepers in the United States ought to set the pace for the rest of the bee-keepers in the country who are not members. The mere fact that some ignorant or dishonest persons might abuse the privilege would hardly be a reason for considering the scheme impracticable. One who joins the church is supposed to quit lying and stealing, swearing and cheating, and all other bad things. Because there are some scapegoats in the church who abuse their privilege is no reason why the church should not set up a high standard for its members.

It was Dr. Miller, I believe, who said we ought to publish the names of certain commission houses who, though responsible and honest, do not do as well by their customers as some other houses. Perhaps the last paragraph above from friend Gilstrap will satisfy the doctor. I am not sure but the idea is all right. In giving the bare facts above, we do not imply that Guggenheim & Co., of San Francisco, are dishonest or irresponsible. The probabilities are that they did the very best that any firm could have done in their market. If R. A. Burnett & Co., two thousand miles away, have it in their power to net the bee-keeper nearly a cent a pound more for this honey, it was probably not because R. A. B.

& Co. were more honest, but because their markets permitted them to realize better prices. We have another case where it was claimed the Chicago firm did not get as good prices on a certain lot (divided in two lots) as A. V. Bishop, of Milwaukee, and so it goes. We are quite willing to publish transactions of this kind, but we shall always feel ourselves under obligation to allow the interested parties to defend themselves.—ED.]

THOSE FENCE SEPARATORS.

The Openings Should be Large enough for the Bees to Go Through them.

BY F. A. GEMMILL.

I am not going to write much this time, but I nevertheless want to say something.

First of all, I will acknowledge the receipt of the goods ordered, including the new $3\frac{5}{8} \times 5\times 1\frac{1}{2}$ plain sections, and the fence separators to be used with them.

Secondly, I may state that, for material and workmanship, they are A 1, and quite satisfactory.

But, thirdly, I have a "crow to pick" with you regarding the horizontal openings in the fence separators, for the simple reason that one of the great if not the greatest secret in producing well-filled sections *minus* pop-holes (and I want all my sections so filled, if possible, notwithstanding any and all arguments to the contrary), is the factor of freer communication throughout the supers. To my mind, therefore, the fences sent me are no better, if as good, as a separator made of one piece, because the bees can not go through the openings; and as soon as they find they can not, they will worry themselves, and lose time in gnawing at the edges of the wood until the openings are enlarged so they can do so.

"But," you say, "if you make the openings so wide, the surface of the comb will have a ridgy appearance, and the sections can not be crated properly," etc.

Well, Mr. Root, if one can not secure the end in view without sacrificing either the beauty of the surface of the comb or the non-freedom of the bees through the super, by taking advantage of the openings referred to, then I can not help concluding that a separator made of one piece, and perforated with $\frac{5}{16}$ or $\frac{3}{8}$ holes, *a la* Pettit, will be much more preferable, even at an increased cost. One thing I do know is that the perforated dividers used and recommended by Mr. Pettit for securing well-filled sections at the sides of the super are a success, for I have tried them; and if I had my choice at a half more expense I would certainly use a separator having the perforated holes, instead of horizontal openings; in fact, I shall not use a fence at the sides of my supers, but, instead, a follower containing the $\frac{5}{16}$ holes, as stated. My reason for this is because I prefer a wider space (a full $\frac{1}{4}$ inch between the follower (or, in due deference to Mr. Pettit's wishes, I will here call it a *divider*, notwithstanding I prefer the name of perforated follower) and the side of

the super than your fence affords, and must have sufficient holes large enough, and of such a shape as to give the *freest* access between the sections and the side of the hive, even when crowded.

Stratford, Ont., Can., March 28.

[I have no doubt at all that the Pettit divider, double cleated, and used in every way the same as our fence, would give good results in comb honey; but one great objection to it is that it must necessarily be much more expensive, both in construction and material, than a fence made out of scrap—such stuff as is ordinarily consigned to the boiler-furnace. If the fence will give equally good results, when *properly constructed*, then, of course, it would have the preference on account of its cheapness compared with the divider.—ED.]

THE SUNFLOWER.

BY W. K. MORRISON.

The inventors are keeping on adding to the already large number of apicultural appliances; yet the greatest want of bee-men still remains unsatisfied; namely, a good bee-plant that will insure him a good crop every year. The crop might be smaller one year than another; but what he wants is a crop of some dimensions. There are several plants that are extensively grown in Europe as field crops, such as beans, gram-peas, lentils, spurry, sainfoin, and sunflowers, and still comparatively unknown in the United States.

Is it not remarkable that all the foregoing are good honey-plants? Whatever others may do, there is no good reason why the American bee-keepers should neglect them. Every one of them is as valuable as buckwheat. Though some of the aforesaid plants may be of greater market value, this article is mainly intended to set forth the value of the sunflower as an economic crop. The expressing of oil from vegetable seeds has assumed the proportions of a national industry, especially in France; and the cotton-seed-oil business of the United States is not small; and peanut oil, too, is coming along with great rapidity. The oil-men say that they want more seeds to handle, so here is an opportunity for us to do them and ourselves a lasting good.

It is not claimed that the industry is a new one, for millions of acres are planted in Germany, Russia, and the central European States. The industry is growing; and, except for the difficulty of transporting the crop cheaply, it would soon reach very large dimensions.

I know that some have experimented with the sunflower, and dropped it. This is quite a common fate for new industries. The trouble with most experimenters in this line is to get seed suitable to their locality and the end they have in view. Especially is this true of the sunflower, for it has many species—the Jerusalem artichoke being one.

If we bee-keepers are to get any good from this plant, uses for it apart from honey-production must be found; and the rule holds

good for all honey-plants except those on wastes.

The Dominion experiment farms at Ottawa have pretty well solved the matter for us, apparently, by reporting that the ordinary Russian sunflower makes good ensilage. This is good news if true. If it were some unknown plant like sacaline the seedsmen would have boomed it for all it is worth.

Here are the assets of the sunflower:

The seeds are very fattening for poultry, and a small supply every day gives a stimulus to egg-production in cool weather.

The oil is scarcely inferior to olive oil, and for salads it is superior.

The oil makes first-class soap.

The stems produce excellent fiber, chemically treated.

The seeds, roasted and ground, are a substitute for coffee.

Pigs fatten readily on the seeds alone—better than on corn.

Oilcake made from the seed after the oil has been expressed is considered by the agriculturists of Great Britain, Russia, Holland, Sweden, Denmark, and Germany, as the finest obtainable feed for cattle. This is high praise, but it is true.

In most localities it is an excellent honey-producer. Where it is not, a different kind ought to be tried. The Jerusalem artichoke is a good bee-plant, and its tubers will pay for hog-feed—the hogs will be better for it. Vil-morin, of Paris, has an improved sort for the table.

Each bushel of seed yields a gallon of oil, and 1500 lbs. of oilcake per acre is obtained. The sunflower is exhaustive to the soil, but wheat produces extra well after it. It enables the farmer to rotate his crops more, and gives him another string to his bow, more especially if he is a stockman.

The white-seeded variety is best for oil; the big black Russian sort for poultry and cattle feeding; but *Helianthus Indicus* is the most profitable for general cultivation. It is a dwarf species.

It is imperative that the seeds be cleaned at once with a fan-mill, and kept dry; if not, they will mold. I think it worth while for bee-keepers to experiment a little in this line, if only to induce their neighbors to take up the business.

Haage and Schmidt, Erfurt, Germany, have good seed, and could probably give more particulars in regard to European methods, but cheap cultivation is what is chiefly wanted.

Devonshire, Bermuda.

[The above article gives us a pretty fair glimpse of friend Morrison. His ideas seem to spread and scatter over the whole face of the earth. I do not know that I ever met a man before who had such knowledge of foreign countries and their special industries as friend M. There has been a good deal of complaint in the United States that sunflowers would not yield honey. From the above it would seem that it is because we do not have the right kind of sunflowers. Now, shall we not have one or more of our experiment sta-

tions make a practical test of the different varieties of sunflowers known, all the way from artichokes to Mammoth Russian? And, by the way, I think there is somewhere in the Patent Office an arrangement for making a fence—yes, a substantial fence that will stand several years, at least so the inventor claims—all of sunflowers.—A. I. R.]

HOW BEES WORK IN THE DARK, ETC.

An Interesting and Valuable Article.

BY E. S. ARWINE.

In March 15th GLEANINGS is reproduced an article from the *British Bee Journal*, on how bees work in the dark and see in the light without inconvenience. If our editor will take a run to a blind-asylum, and see how the little sightless children do fancy work, especially with small beads of various colors, and try how much longer it will take him to separate, with both fingers and eyes, a tablespoonful of mixed colored beads than it does one of those hapless children, he will get a slight inkling of how bees do fancy work in the dark. It is not by sight nor Roentgen rays, but by the sense of touch, entirely. So far as comb-building is concerned, the bees are probably, to all intents and purposes, as blind as the patients in the asylum, through whose optic nerves no ray of light has ever penetrated the darkness that envelops the brain. If it is by Roentgen rays, why do queens always poke their heads into the cells and feel the bottom to know that all is right before depositing the egg? If it is not touch, why not just take a Roentgen peep, deposit her egg, and pass on? Science will probably demonstrate the fact that bees have a set of eyes that can look at the most intense light without any inconvenience, while other eye-facets see only at short range.

As to the queen laying on the exact opposite sides of the comb, it is the instinct of motherhood securing the best possible condition for the safe propagation of the young. Instinct is the sense which causes an animal to take unerringly a straight course to the place of its former abode regardless of the route it may have traveled.

This instinctive sense is what Adam used when he named the animals in the garden of Eden and "lost in the Fall." Instinct should be called intuitive sense, the latter term being more accurate. Reason is not as accurate a sense as intuition had it never been marred by the Fall. When Eve began to reason about the forbidden fruit she was deceived, and the fall of man, with all its attendant woes, was consummated, even to Gethsemane and Calvary, where the Son of God died to redeem us from sin, which resulted from reasoning away a holy law; and men are still reasoning themselves into the lake that burneth with fire and brimstone. Adam was not deceived, but chose to eat, and share the lot of his deceived companion.

If any of your readers wish to Roentgenize the hive, let them do so; but if they are scientifically qualified to make accurate observa-

tions they will ultimately find they are trailing the wrong coon. They had better spend their time in investigating the sense of touch, which is a very delicate sense, or force, and is beautifully illustrated by the inmates of the blind-asylums.

Hold your breath, Mr. Editor, while I announce that sound and light will, in the near future, be recognized as forces (especially sound), and not, as now held to be, ethereal waves, as now thought, just as electricity is now known to be force, and not fluid, as it was thought to be only a few years ago. A trained hand can often feel a sound when transmitted through a dense medium. If you dissent from this position, let your footnotes answer these questions :

What causes light to pass through several inches of glass, and be stopped or turned back by an inch board of porous wood? Can the subtle ether more easily penetrate dense glass than porous wood? Why will not ether carry light through sheet iron as well as through a foot of glass? Absorbs it? Yes. How long will it take to get so full of ether-waves that it will glow like phosphorus in the dark? If they are forces we have this solution: As glass is a non-conductor of electricity, and asbestos of heat, so wood and iron are non-conductors of light, while glass is, perhaps, its best conductor, air excepted. Iron, being a non-conductor of light, is an excellent conductor of the forces of sound and electricity.

I was led to these conclusions by being able to feel sounds with my hand when I was actively practicing medicine. I could almost as accurately diagnose bronchitis by my hand laid flat on the thorax as I could with the stethoscope. Again, if light and sound are ethereal waves, why should light travel millions of miles in a minute, while sound would be many hours traveling that distance? Surely, the discharge of a cannon would give a greater impetus than the feeble rays of a tallow dip; yet the one could be seen a long distance much quicker than the other could be heard; thus air is a much better conductor of light than of sound. The telephone demonstrates that sound is more rapidly transmitted through wire than is electricity, the former being instantaneous for miles, while the latter is not instantaneous.

That's right; thrash Dr. Miller with that bundle of straw until his preaching and practice agree. Hit him again, Dr. Miller. Have the finger point to the side of wagon, and save breakage. I have peddled honey considerably from a wagon, and have learned a thing or two when I can think of them.

I'd like to see Hasty and A. B. Gill, of Paso Robles, eat honey on a race. I would furnish the honey to see the fun. Gill can get away with a pound at a sitting; but how long he could hold out at that rate I do not know—perhaps a month or two.

Dove, Cal., April 4.

[Your science, theory, and practice are all right, save in the reference to the telephone. I have made telephones, acoustic and electrical, a special study, and your statement to the ef-

fect that "sound is more rapidly transmitted through a wire than electricity" is erroneous, or else the theory and practice of the Bell telephone is all wrong, if I understand you. As I understand it, it is this way: The voice acts sometimes on an electro-magnet—more often on a microphone—which in turn causes an intermittent current of electricity to act on an electro-magnet at the "other end of the line." This magnet in the "receiver" causes the diaphragm (or armature) to vibrate in such a way as to reproduce *similar* sound-waves (but not the same) as those spoken at the other end, even though thousands of miles away. That is to say, sound does not travel over the wire of an electric phone at all. It simply acts on the head or mouth-piece, causing certain vibrations. These are reproduced by electricity (another and distinct force) in the receiver at the other end. In a certain sense, sound travels over the wire of an acoustic phone but very imperfectly. I don't pretend to be "up" on the other sciences; but all that Mr. Arwine says sounds reasonable, and, so far as I know, is quite within the range of practice. Indeed, I believe it the best article we have ever received on the subject.—ED.]

FORECASTS OF THE HONEY SEASON.

How does it Affect Market Prices on Honey?

BY C. DAVENPORT.

If GLEANINGS did not have the reputation it has for fair play by allowing everybody in our ranks to express his opinion on all matters relating to our pursuit I should hesitate to criticise its policy of estimating such large honey crops before such is actually assured. I think there is little question that the estimates and reports of large or very large expected crops in the different bee-papers have done considerable to lower the price during the last two years. Of course, bee-keepers themselves are mostly to blame for this by sending in such glowing reports. Still, the editorials on the matter, as a rule, seem to overlook the fact that many—in fact, I think I may say most—of these reports on which such large estimates of the crops have been made the last two years were sent in by beginners or by those who had but a small number of colonies, and on these accounts were not competent authority. GLEANINGS, though, on account of its connection with or intimate knowledge of the affairs of a great manufacturing which has distributing-points all over the United States, has, of course, other ways of forming an estimate of the crop by the amount of supplies manufactured or actually sent out to the producers; still, this does not give an accurate means of estimating the crop; for no bee-keeper, when ordering supplies, can tell with any certainty whether they will be needed that season or for a number of years to come. Besides, this is a big country, and the manufacture of supplies at the present time is in the hands of or controlled by but few factories, comparatively speaking; and on this account if they do a large business, and even

run night and day for a while, it may not mean any thing abnormally large in the honey crop.

I am by no means alone in my opinion on these matters, for last fall I traveled to some extent in this and two adjoining States, and found some (one party in particular) who felt very bitter against GLEANINGS. He said it was doing what it could to lower the price of honey, so they could buy it cheaper. I convinced him that he was entirely mistaken in this by explaining that the firm that GLEANINGS represents handles honey on a very close margin, and would not make any more on an amount bought cheap than they would if a fair price had been paid, and that the honey they buy is a mere bagatelle compared with their other interests; and, laying aside all considerations except mercenary ones, GLEANINGS and those connected with it would have no desire to lower the price of honey, as their own success depended upon the same, for bee-keepers as a whole. I believe, and so do a number of others with whom I have discussed the matter, that The A. I. Root Co. is doing a great deal of good to producers as a whole by buying honey; for, owing to reasons which it is not necessary for me to take space to explain, they have a larger or more generally known reputation for square dealing than (I think I am safe in saying) any other firm in the United States that handles honey in a large way, and undoubtedly many buy of them who would hesitate to order from a less well-known firm.

Southern Minn., April 27.

[Yes, indeed, GLEANINGS has tried to earn a reputation for fair play for both sides. While its editor has certain opinions, he is always desirous of having the opinions of others in his columns, even though those opinions are diametrically opposite his own. But he does not invite discussion for the sake of it, nor that sort of discussion where one side delights in inserting stings into the epidermis of the other side. Some of my best friends are those who differ with me politically and religiously as well as on certain issues relating to our pursuit. I love them more because of their honest differences, and because they are fair and honest enough to give me credit for holding an equally honest opinion.

Now with regard to forecasts of the season. Last year I plead guilty to the mild insinuation; but this year I made a resolve that I should not be guilty of prematurely forecasting the season. I can not imagine to what our friend is referring unless it is notices from our business manager to the effect that we are running night and day, and can not keep up with orders. Indirectly this would imply that bee-keepers all over the United States are expecting a tremendous honey-flow. But this is not the case; for the fact is, last year used up the supplies that were on hand; and as bee-keepers had cleaned out their stock, which they had not done for several years preceding, they wanted more. Now, to offset the possible implication that this year was going to be a tremendous honey year, in our

issue for April 1 I gave expression to these words:

What's the matter with bee-keepers this year, that they are going in so heavily for supplies? Beyond the fact that bees have wintered well, there is no indication that the season will prove to be any thing remarkable.

I think now exactly as I thought then; and I will say further, that, one or two seasons when there has been a great rush for supplies, there has been subsequently an indifferent honey-flow. In consideration of the fact that all the factories have been running full time, and some night and day, like ourselves, it would seem as if supplies enough had been made to last all the bee-keepers of the United States two good seasons.—ED.]



BEES KILLING A QUEEN.

Question.—As I was handling a colony of bees the other day the queen fell off the comb down on the enameled cloth, when I picked her up and put her on top of the frames in the hive. The bees immediately rushed on her and killed her. How is this to be accounted for?

Answer.—Bees will sometimes attack a queen that they have cherished for months as their mother, if she, for any reason, becomes frightened, thus running around and acting like a stranger. Especially is this true in early spring, as the bees seem to "guard their queen with a jealous eye" to a greater extent when colonies are just set out of the cellar, or are having their first flight in spring, than at any other time of the year. For this reason I handle bees as little as possible till brood-rearing becomes well established, when the bees rarely pay any special attention to their queen while the combs are being looked over. When it was necessary to handle frames on account of light stores, dead bees having accumulated on the bottom-board, or to find out whether the colony has any queen at all, I have often found the queen balled as soon as I came to where she was on the comb; and if not, then the bees would form a knot over her immediately on the light striking the comb when it was turned up so as to see her majesty. But it is not often that any queen is killed, as was the one the questioner tells about, unless she is handled, or robber bees come hovering around while the combs are being handled. When robber bees so hover around as to annoy the colony, the bees become jealous at once regarding their queen, and when in such a state they are very apt to place on her the blame for the disagreeableness caused by the opening of the hive, when they will ball and sting her, though the cases where they mete out so severe a punishment are rare. They will more often hug her till the robber nuisance is past, when they will let her go about her work again.

Years ago Mr. D. A. Jones asserted that the motions or actions of a queen are often what govern the treatment of the bees toward her, and I am quite inclined to think he was partially or wholly right. In the above case the queen was undoubtedly frightened by her fall and from being picked up, and so ran into the hive pell-mell; which was not the way the bees were used to seeing their own mother act, so they concluded her to be a stranger, and rushed upon her, fearing she might be the means of killing their own mother, for they had not so far missed their mother's presence. Then she was found where the bees did not expect her to be, and this gave evidence to them that she was an intruder. Then, lastly, the queen probably had acquired a foreign scent by being picked up with the hand, so the smell was not like that of their mother's, and this alone often causes the bees to treat their own queen as they would a stranger. In circumstances like the one described, I always pick up something like an entrance-block, spear of grass, or weed-stalk, etc., allowing the queen to run on it, when it is held near the center of any comb, having brood in it, when the queen, attracted by her subjects, will walk off on the brood, and in nine cases out of ten appear at home at once, as she is now where she was before the hive was disturbed.

QUEENS BEGINNING TO LAY.

Question.—About how long after emerging from the cell before the queen goes out to meet the drone? How long after mating before she begins to lay? What I really wish to know is, how long a time must elapse between the time the first or prime swarm issues from the parent colony, and the time the young queen begins to lay. By knowing this, it will help me much in ascertaining whether each hive that sends out a swarm has a laying queen later on.

Answer.—In the above we have something which is very often overlooked by very many bee-keepers, and thus colonies are allowed to go without a queen till laying workers appear, or the colony dwindles down to where robber bees take away all the honey the hive contains. As a rule, the time from the issuing of the first swarm to the time the first young queen emerges from her cell, is seven days. Then, if after-swarming is allowed, it will be all the way from four to eight days before a young queen becomes established in the hive, over her rivals, and this established queen may be only one or two days old when thus established. As a rule, queens which have their own way fly out to meet the drone when from five to seven days old, so it may be five or six days after such queen is established before she mates. Then there is a period of from two to three days after mating before she begins to lay. Hence when after-swarming is allowed it will often be 24 days before the queen commences to lay, and it is useless to look in such (after-swarming) hives any sooner than this. Then if you look when the queen has been laying only a few hours, the eggs will be so "few and far between" that it will bother you to find them; hence I always consider it

good policy to wait 27 days, at which time young larvae should begin to appear, which, together with eggs in several combs, tells you, generally, upon the lifting of the first center comb of the hive, that a "young queen is there all right." If no eggs or larvae are found, a frame of brood should be immediately given, when you will look again in 48 hours to see if queen-cells are being started. If so, then the colony should be given a laying queen at once, or, if this is impossible, two or three frames of brood should be given them, else they dwindle to where they will be of little value before any young bees will hatch from a queen they may raise from the brood given. But suppose after-swarming is not allowed, then we have seven days to the time the first young queen emerges from her cell, seven days to the time she flies to meet the drone, and three days to the time she begins to lay, this making 17 days as the shortest time any young queen is likely to be found laying from the time the prime swarm issues. Then I would wait three or four days more till eggs and larvae might become abundant in the combs, so I could expect to ascertain what I wished to know on lifting only one or two combs. My practice is to look for eggs and larvae on the 23d day from time of swarming, where no after-swarms are allowed, or on the 27th day where such swarming is allowed. But, more often still, I do not look into any hive at all of late years, as years of looking at the way the bees act at the entrance and in the sections has enabled me to tell at a glance along about the date named, whether the colonies have laying queens or not. When you find a colony that does not have a laying queen the 25th day after the first swarm issues, just watch the bees in their actions at the entrance, and compare their actions with one you know has a queen which has been laying two or three days. Then look at the work, or "non-work," going on in the sections of the two hives; and if you are a careful observer you will ever afterward be pretty sure regarding this matter without ever even opening a hive; in fact, so sure that you will very likely express yourself to others in the matter very much as did the negro editor of that Texas paper, who considered words inadequate when he "boomed" John D. McCall for the mayorality in this unique style: "Mr. McCall is eminently a pious man, honest as the days are long; certainly he never embellishes meager conceptions with a dazzling trope, nor uses fine words to conceal poverty of sense, but, honest to express his conviction, his congeniality, like a brook in the leafy month of June, takes no pains to woo your eye or ear to its musical and sparkling waters; but, come when you will come, in serene weather or in cloudy days, daytime or nighttime, it murmurs sweetly as it goes; break on it in the thicket, cross it in the meadow, it welcomes you with the same pleasing note; flowing it sings, and singing it flows; and his piety gives the sweetness of its tone to his life and character. These metaphorical illustrations are but faint ideas of the greatness of our subject."



THE APIARIAN EXHIBIT AT THE TRANS-MISSISSIPPI EXPOSITION.

Friend Root:—The apiary building at the Trans-Mississippi Exposition is now nearing completion, and its interior arrangement will excel any thing ever before dedicated to the exclusive use of bee-keepers. The building is 128x75 feet, designed after Swiss or German architecture, with ample entrance and exit. Its interior arrangement, with the operating-rooms for filling exhibition jars, and for reliquifying honey, is most complete. The exhibition-cases for honey extend the full length of the building on either side; are four feet deep, with glass tops, and when the exhibits are in place they will be as attractive from the outside as inside; and the visitor passing by will be attracted to the inside in order to see the wonderful exhibits of this industry. The center will be devoted to the exhibition of supplies, and for such exhibitors as desire to erect their own cases. Every thing in honey and supplies has been listed for award, so that, when the jury of award passes on these exhibits, any meritorious article will receive its reward.

Opportunities will be left open as long as possible prior to the opening, for such States as are desirous of making exhibits, to come in and get in place prior to June 1st. Douglas County, in which Omaha is located, has taken 300 feet of space, and, under the supervision of Mr. Auc. C. Davidson, Vice-president of the Nebraska Bee-keepers' Association, will show what one single county of Nebraska can do by way of showing up its honey industry. Outside of Douglas County the State will occupy about 500 feet of space. Other States are taking a proportionate space, and at this time the bee and honey exhibit bids fair to meet the most sanguine expectations of its projectors.

For several days Mrs. Whitcomb has been engaged in preparing an exhibit in beeswax, which will outstrip any thing before exhibited in this line, and must, like the exhibition, be seen to be fully appreciated. The coming meeting of the U. S. B. K. A. should be located at Omaha without farther delay, where the brethren can view the exposition and attend this meeting at the same time, and where as low rates are assured as to any other point, and where the meeting is not liable to become lost amid the hurrah of war and an old-soldiers' reunion.

E. WHITCOMB.

Friend, Neb., April 28.

THE PLAIN SECTION AND THE BETSINGER WIRE-CLOTH SEPARATOR OF 20 YEARS AGO.

At the present time a great deal of interest is taken in separators with bee-passages through them, and in plain sections. This interest is likely to continue for at least some

time to come. Since you take the front rank in finding out new ideas and improvements in bee culture I would suggest that you hunt up the "Betsinger Perfection bee-hive." The important part was the supers, which took 28 plain sections. The sections rested on metal supports that were placed crosswise of the supers. On the tops of the supports were metal projections to align the sections. At the ends of the supers were thumbscrews to give end pressure to each row of sections. The separators were fixed permanently in the super between each row of sections. They were made of wire netting or cloth, and tin bound, and the meshes of the wire cloth were large enough for a worker to pass through. I know from practical experience that woven-wire fencing is better than board fencing, and it may be possible that woven-wire separators are better than the "fence" separators, if properly made. The wire of which the separators are made should be very fine, and as strong and tough as possible, and the separators should be held taut by end elastic tension. The arrangement was invented about fifteen years ago, and was described and offered for sale by Mr. F. A. Salisbury, of Syracuse, N. Y., in his catalog of bee-keepers' supplies for 1887. Mr. Salisbury, I presume, can give you all the information you may want in regard to the hive. I should like to know how the veteran bee-keepers of New York handle the frames of standing-frame hives without pinching bees, and do it quickly. Did not Mr. Ernest R. Root tell how it was done when he wrote for GLEANINGS a series of articles on his trip through that State among bee-keepers? If so, have you any copies left of the proper numbers?

E. A. DAGGITT.

White House Station, N. J.

[Yes, I well remember when Mr. Betsinger put out the Betsinger Perfection bee-hive and his wire-cloth separators, but I do not remember that any one found such separators very desirable, even if we throw out of account entirely their great expense. At the time, it was reported, I think, that the bees would sometimes build their combs clear through the wire cloth as if it were not there at all, and cap said comb on the other side of the cloth. Such separators seemingly did not offer enough barrier to keep the bees within limits in their comb-building; and, if I remember correctly, they were abandoned for that reason.—ED.]

EDITORIAL COMMENTS; A NEW DEPARTMENT ASKED FOR.

Mr. Editor:—I have a few heads of grain to help fill your measure. I fully agree with W. Z. in regard to editor's comments. They are clear cream skimmed from letters far and wide. I consider the different departments in GLEANINGS first-class; but there is one lacking which should be named "Asylum," to be used for the benefit of those with empty craniums, who prefer their grandfathers' cleats to a nice handhole on each side and end, and those who are opposed to plain sections and

fence; also those who condemn T tins. Mr. Editor, should you start such a department, please put Dr. C. C. at the head.

Ventilation should be given at the entrance in raising comb honey, as it will go further in preventing swarming and clustering out, also causing the heat to rise to the sections where needed to ripen honey.

Stop my GLEANINGS! page 311 sounds similar to a command in the U. S. army. The writer may find a good bee-journal, but has lost a good one. I never understood the editor would give lessons in running a brewery, but in bee-keeping. The ring of the correspondent's letter caused me to think a glass of metheglin was taken before writing.

Now one crack at A. I. R. Please read page 25; and if he intends to advocate the use of tobacco dust, as on page 324, tell what will be done with the rest, and prepare a peep-hole to squirm out.

C. R. MORTS.

Mohawk, N. Y.

INCREASING THE SIZE OF BEES BY INCREASING THE SIZE OF CELLS IN FOUNDATION.

Could we not increase the size of bees by enlarging the foundation gradually? I notice in very old swarms, when the brood-comb becomes thick and cells small, we have smaller bees. A neighbor has several old swarms of black bees. The bees look very small beside the Italians I have. You have had more experience with bees than most of the bee-men. Do you know of its ever being tried, and what do you think about it? if it is worth the trouble to try it, could you furnish the foundation?

M. KINNEY.

Putnam, Conn.

[While it is true that smaller bees are reared in smaller cells, the plan does not work the other way. Worker-cells should run a trifle over five to the inch. If they were put half way between worker and drone, I doubt very much whether the bees would breed in them at all. Indeed, one of our customers orders comb-foundation machines that will make foundation having cells a medium between drone and worker. He says the bees will be less apt to use it for breeding-purposes, either drones or workers, because it is neither one thing nor the other. His idea is to use it exclusively for foundation in sections.—ED.

THE FENCE AND PLAIN SECTION 38 YEARS OLD; FOUND TO BE SATISFACTORY.

I see in your catalog you state that the separator, which you style the "fence," is not a new idea, but has been used some seven or eight years. During the year 1860 I bought of Richard Colvin, of Baltimore, two Langstroth hives in which this style of separator was used in the supers. The sections were made of $\frac{1}{8}$ -inch stuff, and were $1\frac{1}{2} \times 4\frac{1}{4} \times 8\frac{1}{4}$ inches. The supers held 16 of these sections—2 in a row and 8 rows—if I remember correctly. The sections were placed in a frame, similar to your shallow extracting-frame, which was suspended in the super, with the fence separator between each.

I used the Colvin plan for surplus comb honey up to the time when the present sections came into use, and found it satisfactory.

Cumberland, Md. J. B. WIDENER.

CHERRIES CANNED IN HONEY.

Five pints stoned cherries and one pint extracted honey. This makes one and a half quarts.

GOOSEBERRIES CANNED IN HONEY.

Four pints gooseberries and two pints cold water. Cook slowly until partly done, then add one and a half pints extracted honey, and cook till done.

HONEY NUT CANDY.

Use the recipe given in honey-leaflet for honey caramels, cooking till it hardens in cold water, then pour over nut-meats. When cold, break in pieces.

MRS. R. C. AIKIN.

Loveland, Col.



J. W. B., Texas.—I can not understand why you should have trouble with yellow-jackets. I never heard of a case before where they were so destructive as to make away with whole colonies. As I am not up on the yellow-jacket question, I will refer you to Prof. A. J. Cook, Pomona College, Cal.

J. M. H., Ga.—You will do much to prevent honey from granulating by bringing it to a temperature of about 180 degrees Fahrenheit, and sealing it while hot in glass jars or fruit-cans. Honey should not be heated above 180, usually, as it will destroy its delicate flavor. Your method of hiving swarms with clipped queens is much like that employed by a good many other bee-keepers.

L. L., I. T.—There is no danger of the queen's getting out of the front of the hive having one of the self-hivers mentioned in our A B C of Bee Culture, providing you follow the directions, or use the self-hivers exactly as they are constructed. But we do not advise any one to put very much faith or money in these devices. Better get the colony so strong that there will be no desire on their part to swarm. To do that it may be necessary to give two L. brood-chambers.

M. S. G., Ind.—In a case where we use two brood-chambers, as mentioned recently in GLEANINGS, in order to get large colonies and do away with swarming, we have only one queen, but she is a good one. We use no perforated zinc between the chambers, as that would defeat the very object we aim to secure; namely, the avoidance of swarms. If the brood is confined entirely in one hive, in my experience the bees are more inclined to swarm; but if there is brood in both chambers they will settle down to business and pile in the honey, both in the brood-chamber and in the supers.

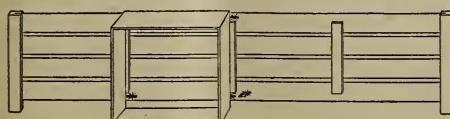


THE subject-matter of our "Honey-Leaflet" is gotten out in more elaborate form by R. K. & J. C. Frisbee, Denver, Colorado, for their special trade. It is neatly bound in a cover, decorated colors. Besides the special matter of our leaflet, it contains other items relating to honey, of special interest to the consumer. That's right; keep the ball a rolling—that is, the truth about honey constantly circulating.

UP till within a few days there has been no late work in German on the subject of bees, especially adapted to American bee-keeping. Mr. J. F. Eggers, of Grand Island, Neb., an intelligent and progressive bee-keeper, has just published a small work that will "fill a long-felt want," entitled "Bienenzucht und Honiggewinnung." Of course, nearly all progressive Germans of this country read English to a greater or less extent; but I've noticed a'l the same that all "Dutchmen" like to talk and read in their own mother-tongue when they can do it just as well. Well, this new book contains 51 pages, and is thoroughly up to date in every particular. The manuscript, before publication, was reviewed by Friedemann Greiner, a bee-keeper who is exceptionally well posted regarding all developments, both in America and in his "Fatherland." He pronounced the subject-matter orthodox and up to date. As the demand will be limited, of course, to German readers, the price will necessarily have to be higher than a similar work of this kind in English. It will be sent from this office for 50 cents, postpaid, or from the publisher, as above.

CONTINUOUS PASSAGEWAYS IN THE FENCE.

ALONG when we first introduced the fence, quite a number of inquiries came in, asking why the cleats were dropped down a little from the top edge of the top slat. The purpose of this was to give side passageways between the slats and the edges of the plain sections. After we had sent out a few thousand fences thus, we decided to shorten them at the bottom in the same way. The illustration below shows the fence we have been sending out to the great bulk of our trade for 1898.



The real reason for having the cleats shorter than the width of the fence proper will be made more apparent from the illustration. The object of giving the bees side passageways is, of course, to give better filling to the sections. I do not wish to go on record at this time as stating that these side passage-

ways will positively bring about this result; but if the experiments of Mr. Danzenbaker, in his open-corner sections, which we sold a year or so ago, and if the statements and observations of that prominent bee-keeper, Mr. L. A. Aspinwall, of Jackson, Mich., mean anything, these side passageways will probably do much to bring about a plumper and better filling of the sections.

But suppose there should be some, like Doolittle, who do not want their sections filled out as plump, but would like to have them the same as the average sections on the market. All we should have to do would be to lengthen out the cleats to the height of the section, and then, instead of having a series of slats, use only one wide slat or strip of veneering wood nearly of the depth of the section. This would secure for the plain section the same sort of filling we now have in the old bee-way sections, because the conditions would then be the same.

BIOGRAPHICAL SKETCHES — WHAT SHOULD THEY TEACH?

ONCE in a while I see in some of our exchanges pictures of unknown bee-keepers who have attained no special success in the line of bees. Occasionally biographies and photos of some bee-keepers are sent us of whom I never heard before, much less do I know of their having distinguished themselves in any particular line. I feel that it is a duty we owe to our readers to give biographies only of prominent bee-keepers, or of those who, though less prominent, have been especially successful in some one feature or department of bee-keeping. Let me illustrate.

Mr. Miles Morton, outside of his own immediate vicinity around Groton, N. Y., was scarcely known; but when I visited him I found that he had a surplus arrangement and a form of separator that enabled him to put out section honey that would bring a higher price than that produced in the ordinary supers.

A little later I gave you a look at the face of that honest sturdy bee-keeper, Mr. Dan White, the man who knows how to sell honey at a high price—yes, knows how to peddle it without losing his dignity or self-respect.

And, again, some little time ago I showed you the face of Mr. Merton Chase, of Whittlesey, O., another bee-keeper comparatively unknown to the outside world. Why did I give him such prominence? Because he always gets some honey every season whether any one else in his vicinity does or not, and because he always has the first honey on the market, and because his honey is always A No. 1.

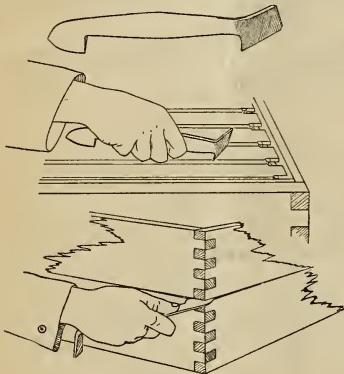
In this issue I take special pleasure in introducing my old friend Chalon Fowls, of Oberlin, O. Why he deserves special distinction is because he knows how to get double prices on his honey—not by trickery but by selling honest goods that have a reputation for purity backed by his own good name.

In giving you occasional biographical sketches of bee-keepers who have distinguish-

ed themselves in some special line of bee-keeping, I do not seek to bolster up their vanity, if they have any, but to give our subscribers something of real merit in their special work.

A HANDY TOOL FOR THE APIARY.

FOR A year or so back I have felt that we ought to list some sort of tool especially adapted for prying supers apart, for separating Hoffman or other fixed frames, and for scraping propolis or wax off from the top-bars. While I was at the Buffalo convention, Mr. George Conrad, of Lynn, Pa., showed me a tool from which he had derived a great deal of satisfaction. The illustration below will make its manner of usage apparent at a glance.



I have for several years used a large screwdriver; but one objection to it is that the blade is too narrow, and too thick and blunt. I have seen the time when I have had, by main strength, to force the point of the screwdriver between two supers to separate them; and even then I have had to exert a considerable pry to bring them actually apart. The operation of separating the supers was not so bad as the mutilation of the edges of the super or hive. Quite a number of hives at our out-yard show screwdriver marks; and I imagine that, in time, these marks would become deep enough to let in robbers, especially if the super and hive did not fit squarely together. Our apiarist uses a strong putty-knife, the blade of which has been cut down to half its length to get strength for prying. This has the advantage of a broad thin blade that will not mar hive edges. But my objection is that such a blade is not stiff enough to stand a good pry.

Mr. Conrad has got the right idea of a pry. It is made of tool steel forged out by hand. The upper end, or that edge, rather, that represents what may be called the ax or hatchet end, is thinned down to a broad knife edge. This edge is crowded between the supers as shown in the cut, and a slight twist breaks the connection. The other end may be used for scraping or prying, as the case may be.

I am not sure that Mr. Conrad has the best form of implement. In my mind's eye I see what to my notion would be an improvement. In fact, it is the identical tool that neighbor

Shane used years ago, and which I have tried and found to be very handy and serviceable. I'll have a picture made of it shortly.

I know this seems like a small matter; but a really good, handy serviceable tool would be worth bushels of putty-knives, screwdrivers, jack-knives, and, in fact, any other form of tool made for another purpose. It should be made of the finest grade of steel—something that will permit of a thin broad edge for prying, and yet that will not bend or snap. If we can only get hold of the right form of tool we will see that the right kind of steel is secured.

"SUCCESSFUL METHODS FOR REARING QUEEN-BEES"

is the title of a new pamphlet just gotten out by Henry Alley, of Wenham, Mass. While it contains only 20 pages of reading-matter, it is the boiled-down experience of a veteran queen-breeder covering a period of thirty years. Some of the methods are the same as those given in his former works, particularly that wherein he destroys every other egg and forces the bees to build cells over the remaining eggs. But the part that seems to be particularly new is where he says that, with an ordinary colony, he can raise cells, even with the queen present. In a nutshell the scheme is this:

Cut out the bottom half of the comb of a standard frame, and insert in a bar $\frac{3}{4}$ inch thick, by $\frac{1}{8}$ inch wide. This is nailed in a frame directly under the comb. On one side of the frame there is nailed a piece of perforated metal large enough to cover the space where the comb was cut out. The metal is nailed firmly to the middle and bottom bars of the frame. On the other side the metal is arranged to serve as a door so that the room under the middle bar can be utilized for fastening the little strips of comb containing the eggs for cell-cups. The metal door is put in place to keep the queen from the cell-cups. If the queen has access to them she most likely would destroy them, and no queens would be reared.

A little further on he speaks about giving cell-cups. It would appear to me the bees would not build cells off from comb treated as given in the extract above, although they might finish *cell-cups* inclosed in perforated metal such as Mr. Alley describes; so I take it that cell-cups is what he refers to. The price of the book is 25 cents, and can be obtained of the publisher as above.

TWO-STORY LANGSTROTH COLONIES FOR COMB HONEY ; SEASONABLE AND IMPORTANT SUGGESTIONS.

THERE has been much inquiry of late regarding the double-brood-chamber method of preventing swarming when working for comb honey. Although I have covered the ground pretty well it now occurs to me that I have left out one or two important points, and perhaps others should be emphasized.

The two-brood-chamber plan will not work unless the colony is strong enough to fill both bodies *full of bees*. This part is very important. Putting on an extra chamber during the time honey comes in will only result in all the honey going into the upper story. This, of course, will have to be filled before the bees will store in a comb-honey super. The time to double up the colonies is now. Get them

fairly boiling over with bees in two-story hives. If brood is pretty well scattered in both chambers there will be but little swarming, and the honey will very soon be put into the comb-honey supers. Unless you can succeed in getting both brood-chambers crammed full, better remove one of them just as honey is coming in, and put on two comb-honey supers instead. This may result in swarming, but you will get some honey. The advantage of the double chamber is that it almost entirely does away with swarming, and still comb honey can be secured. Don't forget that you must have a good queen, and both stories crammed with bees and brood in *before* the honey-flow.

I don't say that the plan will work for all localities, but it works tiptop here.

MANAGER SECOR AS AN ARBITRATOR.

SOME time ago I referred a difficulty between a bee-keeper and a commission house to the manager of the U. S. B. K. U. The case was a particularly difficult one, especially one where collection seemed well nigh out of the question. As a last resort, and with a feeling, I must confess, that nobody could do anything, I referred the matter to the Manager of the U. S. B. K. U., Eugene Secor. The commission house in question does a large business in one of our large cities. For certain irregularities we never admitted their quotations. Well, what was my surprise when I found that Mr. Secor had actually compelled them to pay up! and the bee-keeper who, I think, had also given up his case, was so pleased that he turned in \$2.00 to the Union for payment of membership in advance, saying that, if that was the way the Union was going to champion the rights of members, he was going to support it.

Manager Secor is a good arbitrator; and if he could bring about a satisfactory settlement in a case that seemed practically hopeless, as was the above, he is a captain.

For years back we have been acting as third party, or arbitrator, between commission men and bee-keepers; but on many accounts the Union can and should do far better work, and at the same time bring to bear its moral prestige and strength; and I would suggest, therefore, that in future all cases be turned over to General Manager Secor, of Forest City, Iowa, for I am sure he will handle them with discretion and ability. But there is one thing you must not forget to do, and that is to become a member of the Union before you get into trouble. It is hardly fair to expect that the Union would come to your support if you are not already a member.

Every one of our subscribers ought to be allied at once to this organization that stands for the best interests of the bee-keeper and the championship of his rights. Do not wait till you forget about it, but plank down your dollar at once. Members of the Union can have GLEANINGS for 75 cts., and, if I am correct, the other journals give special rates likewise. These and other benefits ought to make membership worth many times its cost.

FOUNDATION 18 FEET TO THE POUND.

THE first mill for turning out this product, which I mentioned on page 312, was not exactly according to Mr. Weed's notion, and he accordingly went to work and made another, incorporating a new feature, and with rolls *six inches* in diameter instead of four, and involving entirely new principles of construction. The machine is not yet hitched on to steam power, but from preliminary tests we have made by hand it looks as if we would be able to turn out a product that for lightness (18 ft. to the lb.), and thinness of base (from 3 to 4 one-thousandths inch thick) that will excel any thing heretofore put on the market. When it is remembered that the bees make the bottoms of their cells only $\frac{1}{1000}$ thick, or about that, it will be seen we have approached Nature itself. But this mill runs the wax out just the *opposite* of what is done on ordinary rolls; that is to say, the sheets will have to hang with the parallel sides of the cell-walls parallel to the line of support. By a special construction of the cell-walls and an arrangement of the die-faces Mr. Weed confidently expects (and preliminary tests have led us to think he is right) that the resultant product, 18 feet to the pound, when hung as it should be in the hive, will actually stretch less than the article measuring 13 feet to the pound, heretofore sold. And this is not all. There will probably be no more fishbone in comb honey built from this new article than from that built wholly by the bees, and worker comb at that. I do not want to go on record as saying that *both* of these results will be accomplished beyond a doubt. Tests this summer will have to prove that.

We hope to be able within a week to supply this new foundation at 75 cts. a pound in lots of one and two pounds, and possibly larger quantities, providing machinery now in process of construction for driving such large rolls works all right, as we can not very well supply it in quantity and turn the new mill by crank. And the price will be less, probably, after we get through "experimenting." Don't expect prompt shipment if you order this foundation with *other goods*.

Mr. Weed, who is now in Cleveland, wishes me to say that his dies for drawn foundation are progressing finely, and he hopes to have the new product, with natural bases, ready to deliver soon.

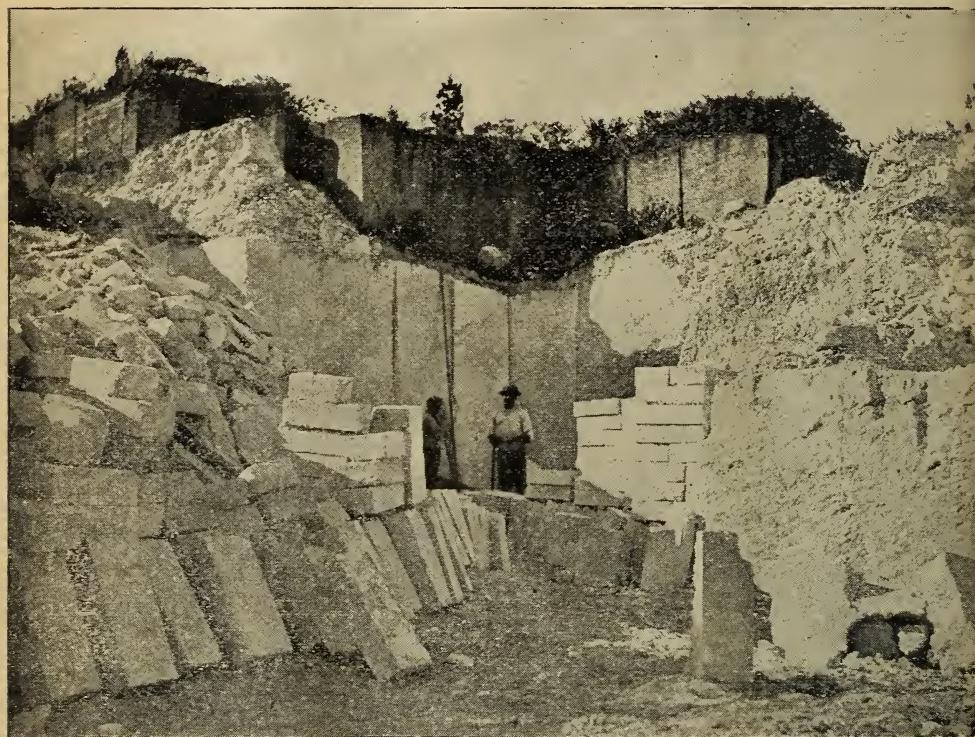
FRUIT-BLOOM.

FRUIT-BLOOM in this locality has been more profuse, and made more of a showing in the hives, than it has done for several years past. Reports over the country seem to indicate the same thing. This means, if it means any thing, lots of brood-rearing, and strong colonies ready for the main honey-flow in the latter part of June or fore part of July. All this looks very hopeful; but I have not forgotten how in former years we have had the same favorable conditions, and yet practically no honey at the time when it usually comes. This was true in some localities last year, and more true in many localities the year before.



I have before mentioned the beautiful roads for wheeling in Bermuda. Some parts of the island were settled a very long time ago—about the time the Pilgrims landed, in 1620. In fact, there are a good many tombstones around the old churches, whose inscriptions date back into the early part of the 1700's, and I think a few in 1600. Many of the roads were made by the Queen's military troops;

the United States, he replied that all the world except the United States turns to the left. I could not understand why Bermuda should be just opposite all the rest of the world from my standpoint; but he informed me that it was the *United States* that was contrary, and different from everybody else. There was no help for it. I had to learn to turn to the left; but every little while I would forget myself, and be obliged to apologize to some man, woman, or child for attempting to "crowd them into the wall." They accepted my apologies, however, very good-naturedly, for they have the same thing over and over again with every shipload of foreigners.



A BERMUDA STONE-QUARRY, WITH THE QUARRYMEN AT WORK.

and as the island is very undulating, in order to get an easy grade almost every main roadway is cut more or less into the solid rock. As this coral rock is light-colored—in some places almost white—the stone roads make a very pretty appearance. I asked friend Morrison if the roads were swept off regularly in order to keep them so clean. He said there was no sweeping except that done by the wind and rain. There is quite a good deal of wind in Bermuda—at least in winter. Everybody there, either when driving or riding a wheel, turns to the *left* in passing. Friend Morrison told me to keep it in mind if I wished to avoid accidents. When I wondered at their reversing the universal rule that is current all over

In some places these stone roadways are cut down into the rock from ten to fifteen feet. Now, this is not so formidable an undertaking as you might suppose. The Bermuda coral rock saws easier than tender pine boards, and it does not dull the saw very much either. Perhaps I told you that lumber is almost unknown in Bermuda, unless it is shipped in from the United States or Nova Scotia. The houses not only have stone foundation, but stone walls, stone roofs, and, to a considerable extent, stone pillars. Let me give you a picture that illustrates where they get building-material in Bermuda.

You see, when a man wants to build a house he clears off the soil—that is, if it is not a bare

spot already—in some corner of his lot, and then saws out his "timber." With a common hand-saw, and a cross-cut saw used by two men, he gets out material very rapidly. The picture shows how deep down they go below the surface; it also gives you glimpses of the cedar brush that grows all over these rocks. On the highest point in the picture you can see where somebody cut out building-material, may be a hundred years ago. As more is wanted they have moved lower down the side of the hill, and got down where it is cleaner. This rock, when it is first uncovered, saws much easier than when it has been exposed to the air. The blocks are cut out and then stood in the sun to season. For the roof, and even for the ceilings of the rooms, they cut the stones quite thin, say an inch or an inch and a half thick. The rock is so porous that the rain would probably go through the roof were it not whitewashed. This whitewash, on exposure to air, soon turns into an insoluble carbonate of lime, and then it sheds water. For a similar reason the walls are also treated once a year to whitewash; and as there is no frost, if you keep your house whitewashed it will never wear out. There are plenty of colored people always ready to keep every thing whitewashed up in style, and there is really no excuse in Bermuda for having any thing look dilapidated. Just keep it whitewashed—fences, out-buildings, etc., and they are always as good as new.

Hamilton, Bermuda, is near the center of the island—that is, the island strings away out ten or twelve miles in two different directions; but wherever you go you are near the sea-water all the while; and on many of the hills you can see water on both sides. This soft porous rock reminded me of the neighborhood of Mammoth Cave. In fact, there are some very pretty caves on the island. Walsingham Cave, not far from Devil's Hole, is one of them. Right beside it is the old home and residence of the poet Tom Moore. Right near the mouth of the cave is a large calabash-tree mentioned in one of his poems. Inside of the cave are basins or wells of sea-water; and this water is so still and so transparent that one may easily look down thirty or forty feet, and see objects on the bottom. When lighted up by blazing palmetto branches this submarine view is very beautiful. The coral rock on the bottom is of varied colors. The white sand sets off every thing and makes it a veritable little fairyland.

The hotels in Bermuda, like those in Florida, are mostly kept open only during the winter season. As every thing has to be brought in, prices are three or four dollars a day—some of them five. While off on a trip to Saint George's we took dinner at an English hotel, or boarding-house, called Mount Erie. It may interest some of the readers of GLEANINGS to know what we had for dinner and how it was served. The dining-room had little tables for just six people. We were waited on by a very pretty young colored woman. There were seven courses in all, the dishes being all taken away and new ones brought for each course. The first course

was soup with little fishes about three or four inches long, called "grouts." Course No. 2 was roast beef and Bermuda potatoes. The potatoes were boiled with the jackets on, and they popped open like kernels of corn. The contrast between the red jackets of the Bermudas, with their snowy insides, made them look rather pretty. Course No. 3 was string beans and baked tomatoes. Now, I am not usually much of a hand for tomatoes; but these were, I should judge, first boiled and then baked, and baked brown, and I tell you they were tiptop. Course No. 4 was cheese and crackers. The crackers were excellent, and the cheese was the kind that comes in round balls about the size of a cocoanut. Of course, it was tiptop. Course No. 5 was fruit—bananas, apples from America, etc. Course No. 6 was English plum pudding; No. 7 was coffee. The coffee was not served till we left the table. A colored girl followed us into the sitting-room with an extra quality of coffee—cream and sugar to match. The expense for—I came pretty near saying dinner; but if you want to be in style you must wait till toward dark, or after dark, for your dinner. What I have described was simply lunch, and this lunch cost 75 cents, our money. I suppose dinner would be more. I did not have any dinner while in Bermuda, for I found it policy to stick to my beefsteak, especially for the last meal in the day.

After lunch we climbed to the top of Mount Erie, and were entertained by seeing one of the Queen's gunboats fire shot after shot. We could first see the smoke, then the splash of the ball in the water; and as the shot generally skipped, another splash half a mile or so from the first one, and then, last of all, we heard the boom of the cannon. It seemed a little funny that we should see the smoke and the splash in the water long before we heard the sound of the gun. Little did I think that day how soon gunboats and cannon were to be the absorbing topic of America, if not of the whole world. On another trip in a different direction we came so near the English fleet that was just then anchored off the island that friend Morrison got permission for us to visit briefly an English man-of-war called the Destroyer. Little did I think, while going over this neat little craft, that we were so soon to discuss such warlike structures with so much interest. This boat was about a hundred feet long; but in the widest part it was a little less than twenty feet. The inside was done off in little cabins, in exquisite style, and every thing for comfort. But I noticed the gangway where we climbed down could be shut up water-tight; it made me think of going down into a tea-kettle and shutting the cover down as tight as a cork in a bottle. The polite and gentlemanly commander took us all through, and answered all our questions; but I was too much "rattled" to ask him how they got air to breathe when the sea was so boisterous they had to be "corked up." Somebody told me they pumped air in, for the inmates to breathe, by means of tubes that run up to the mast-head, which, of course, is always out of the water. The Destroyer is

needed more for speed than for almost any thing else; but, of course, she carries some pretty good guns. If I am correct, fifteen or twenty men are all that are needed, even in an encounter. Just about that time we were startled by a dispatch announcing the destruction of the Maine. Friend Morrison said right away that it meant war sooner or later.

In my next I shall have something to say of the personal history of my good friend W. K. Morrison. In my travels it has been my pleasure to form the acquaintance of quite a number of remarkable men; and I shall always regard friend Morrison as one of the most remarkable, as he has traveled so much, and has such a general knowledge of different nations of the earth.



Think not that I am come to send peace on earth: I came not to send peace, but a sword.—MATT. 10:34.

It is a little difficult for average humanity to comprehend that a Christian man may also be a fighting man; or harder still to reconcile the idea that a Christian man *must* be a fighting man. It is much easier to imagine that Jesus came from heaven down to earth to bring peace and good will. But at times it seems as if there were no path to real substantial and permanent peace except through war and bloodshed. If I understand it correctly, it is with this thought in view that our Savior uttered the words of our text. A Christian man is expected above all others to be at peace and on friendly terms with his neighbors. And that is the great universal rule. And yet there are times when the Christian man can hardly be called a Christian unless he makes a general disturbance in the neighborhood. The great danger is, however, that Satan gets hold of us and persuades us that war is the only thing when there is really no need of fighting at all. The Bible is full of texts emphasizing this very fact. Just once, if I am correct, Jesus spoke about the sword instead of peace; and only twice in his ministry—that is, so far as I am aware, did he with his own hands set an example of any thing like aggressive Christianity. You may remember that at two different times he overturned the tables of the money-changers, and drove out the guilty traffickers with a whip of little cords. It has occurred to me that sometimes our churches, and especially our church festivals, might at the present day need a heroic, God-fearing man who has grace to do the same thing, and with the same words the Savior used: “My house is the house of prayer; but ye have made it a den of thieves.”

A thousand times in my own life I have regretted and repented of waging war when some other course might have answered to accomplish the same end; and ever so many times I have repented that I waged war so

vehemently when just a little “war” might have answered the purpose. It seems to be this way: When even the most devout and best man decides that it is a matter for “righteous indignation,” unless he is very careful Satan gets a finger on his reins and persuades him to go further and say more than he really intended to say when he started out. And herein is one of the most difficult things a Christian has to meet. Truly it is a “straight and narrow path” for humanity; and sometimes it seems to me so exceedingly straight and narrow that I shall never be able to make any decent record. My path, instead of being straight, turning neither to the right nor to the left, as I look back seems to present a series of wobbles; and the wobbles are not always on one side, mind you. Somebody breaks the rules of our establishment by indulging in profanity. The transgressor may be a difficult man to manage, and I dread the encounter, and put it off. Sometimes I entirely neglect to do any thing. In doing this I am deviating from the straight and narrow path; and if I continue to deviate, pretty soon I hear from it. Others take the opportunity to follow this man’s example, and by and by our establishment, that has such a reputation for good morals, gets to be—well, as bad as some crowds of workmen you have seen or heard of. Wabbling to the other side of the straight and narrow path would be to reprove the man while I am provoked, and may be turn him off. Both ways are bad, and I do not know but one course is about as bad as the other. The straight and narrow path is to wait long enough so that you can find your man in good temper; and be sure that you see him alone by himself, without others around to repeat and report the transaction. Do not undertake any task of this sort until you have prayed that the divine Spirit may give you grace and wisdom. If your daily work is such that it requires constant prayer, all the better for you. Nothing does a man so much good; nothing braces up the Christian like experiences that drive him constantly to the throne of grace. “O Lord, I am weak. I am very weak and foolish. Thou art mighty. I come to thee; for without the presence of thy Holy Spirit I shall surely fail.” After a prayer like the above, that is wrung from the heart, good work is going to be done.

Without question, it is sometimes the duty of Christians to fight. Yes, it is the duty of Christian nations to fight; and no doubt it is God’s will that Christian nations should fight with cannon and all the modern implements of war; but as to just *how far* the person or nation should go in fighting is a question. Whenever I think of it, a brief prayer wells up from my heart: “O Lord, give grace and wisdom to those who are fighting—fighting, as we believe, for thy kingdom and for thy righteousness.”

In fighting evil and wrong, it is not always easy to say just where we have stepped out of the straight and narrow path. There may remain, after the affair is over, a sort of unpleasant feeling or a reproving voice, as it were, as if the Holy Spirit had been grieved;

but yet in going over the matter in detail, self or Satan (which is it?) seems to say, "Why, that is all right," and so on clear to the end.

When you are fighting, even for Christ's sake, do not get a going with such vehemence that you can not stop when you ought to.

We need fighting Christians for the cause of temperance. God only knows where our nation would land if we did not have fighting Christians. Yes, and we need fighting *ministers*. May God be praised that we have quite a few of them at the present time. Some have lost their lives—have died martyrs to the cause of temperance. But there are more who are ready to die when it seems as if somebody must die to stop this awful and overwhelming traffic. While I write, this country is waging war with a foreign nation. If I am right, it is almost the first, or, say, one of the first, battles fought directly for the sake of humanity. We are not fighting for our relations, and we are not fighting because it is Americans who are suffering wrong and oppression. The spirit of the times seems to say that every suffering son of humanity is our neighbor, and our country has accepted that great Bible truth, brought out so prominently when Cain asked the question, "Am I my brother's keeper?" We are recognizing the Cubans as our brothers, no matter what the race, color, or condition.

For years past the world has been discussing the question whether it is right and proper for a nation to interfere when some other nation is torturing its people by prolonged starvation, bloodshed, and outrage. During the atrocities perpetrated on the Armenians, Gladstone and a host of Christian people back of him called loudly for intervention by the powers—intervention by war if nothing else would answer. None of the nations saw fit to move in the matter. Finally, however, may God be praised, our own nation has seen fit to move when a repetition of these same cruelties came a little nearer our own shores. If this should be the means of bringing about a new departure that shall spread over the whole wide world—a new departure that shall by custom authorize the intervention of foreign powers when cruelty goes beyond a certain limit, then I say again, may God be praised.

It used to be taken for granted that a father could punish his child just as much as he saw fit; and if anybody remonstrated he could say, "Tend to your own business and I will tend to mine."* But of late many a father has found to his sorrow that he can not carry this thing beyond a certain limit, before the neighbors interfere. Not very long ago some very ungrateful sons went too far in being cruel

* Until within a few years a man could whip his horse as long as he felt inclined; and if anybody remonstrated he could tell him to "mind his own business;" but, thanks to the Humane Society, the Christianity of to-day says, "Not so;" so that in one sense the Christian and humane world are beginning to regard even domestic animals as our neighbors in the sense that Jesus put it when he gave us that wonderful parable of the good Samaritan. The Christian says, "Thus far shalt thou go, and no farther." To be sure, it is a hard thing to go to court and incur a neighbor's displeasure and ill will; but one can not be a consistent Christian unless he bears such crosses as these, and, when nothing else will do, takes up the sword in defense of the helpless and unprotected.

and inhuman to their father. They were greatly astonished when not only the neighborhood but the whole community turned out and interfered; and I believe people generally are fast learning that public opinion may be outraged only about so far. God forbid that I should encourage lynching or mob law; but I do rejoice that community is beginning more and more to hold each person responsible for his acts. Perhaps our Endeavor Societies, that have pleased and astonished us so much by their wonderfully rapid growth, may, when they get to be a little older, take up a little more aggressive Christianity. While the great meeting was in progress in San Francisco there were terrible strikes going on throughout our land. Some of them almost threatened civil war. I suggested at the time that, as there were Endeavorers, without question, on both sides of the opposing forces, this great Endeavor meeting should try to bridge over the chasm between capital and labor. There are enough Endeavorers to do a tremendous work in the way of arbitration. If that should fail, what a mighty work the Endeavorers, if they would fall into line, might do in battling for right! and in the same way along many other lines. They have already accomplished a good deal in the way of discouraging Sunday traffic and Sunday excursions. The Young Men's Christian Association is another organization embracing Christians of *all* denominations. Surely we may expect the grace of God to go with and guide these friends of ours in fighting for the banner of Christ Jesus.

When this present war is ended (and I have believed from the very start that God would help us to make it a brief one) there is going to be an opportunity for spreading the gospel, such as the world never had before. Everybody seems astonished at the ease with which men and money came forward when war was proclaimed. May God grant that, when peace reigns again, this same spirit of patriotism may prompt mankind to have a like enthusiasm in coming forward to support the missionary work! The call for teachers the call for printing-presses and books, was never before so great as now. The most benighted nations—those that have been deepest steeped in superstition and heathen darkness—are waking up and groping toward the light. God help us that we may be able to give them *wholesome truth* instead of whisky, opium, and tobacco.

MISTAKEN VALUES.

We clip the following from a recent issue of the *Sunday-school Times*:

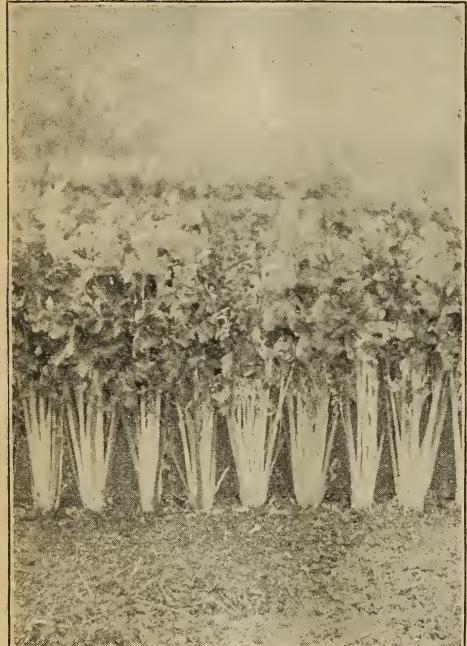
The man who cheats another thinks that he has the best of a bargain, because the character for honesty and truth which he sold he valued at less than the few dollars which he gained. Yet those few dollars a single day of honest labor might have given him, while that lost innocence, that is beyond price, can never again be recovered.

Let me suggest that the above applies to those who not only willfully cheat a neighbor but who charge a larger profit on things than they themselves would be willing to give under like circumstances.



HOW TO GROW NICE CELERY WITHOUT ANY EARTHING UP.

We have had so much instruction in growing celery that it would almost seem as if every one should know how. But even if every one does know, he does not do it. The directions given by our friend below will, I think, do it every time, providing you have the right kind of soil to start with; and you can make any kind of soil right if you go at it as I have described elsewhere in this issue for growing strawberries. If you own or can get control of any piece of ground where it can get the sunshine and the rain you can make it grow stuff. We will now let our friend tell his story.



Growing celery for market is quite a particular job. A number have tried in our locality to grow celery, but have not succeeded very well. It is not as good when earthed up, as the soil is black and sticky, and leaves the stalks rusty, besides the great amount of work there is in earthing up. Seeing an article in GLEANINGS last spring I went to work as follows: I started my plants in April in small low boxes, quite thick; when large enough I transplanted into larger ones (outdoors), 2 feet wide and 3 long, in rows 2 inches apart, and $\frac{1}{2}$ inch in the row. I kept them wet until large enough to set in the garden. I prepared the ground with rotten barnyard manure; plowed in and thoroughly harrowed, then staked out the rows three feet apart, and raked the ground fine and a little hollow where the rows came. Wet the ground well and lay a board 5 inches wide right where you want the rows; get the plant-box and give them also a good wetting. If grown right, the box will be full of roots. Cut with a knife between the plants and take them out, and with a dibble make a hole (or, rather, a

row of holes) on each side of the board, about 5 or 6 inches apart. If there is no rain at the time, water well. I make the hollow a little lower at one end, so as to run the water between the two rows with a hose from a tank. Our water is pumped up with a windmill for our stock. When the plants are about six inches high, put up boards 18 inches wide on each side of the two rows, a foot apart. The boards, straight up, are held apart by narrow strips tacked across tight at each end with a board one foot wide on the end. I now put long barnyard manure between the boards, about 4 inches deep; tramp it down well, and the job is done. Ours grew at the rate of an inch a day until it was out of the boards.

This plan does not need much water. After the mulching is done I take a gas-pipe with a hole in every foot; lay it on the mulching, and screw the hose in the end, and the water will soak through the mulching and down into the hollow where the plants are. When these two rows are wet enough, move to two others, and so on. When the leaves are well out of the boards, or about two feet high, close the board in at the top, and in a week blanching is done.

When we want celery for market I take the board away, as shown in the picture, and cut it out. It is beautiful, tender, and clean; needs no washing or cleaning. When I took the first to town the people were surprised to see such celery grown in Minnesota. When I went again I inquired how they liked it. They told me it was as good again as that shipped in. Welcome, Minn.

WM. SUTER.

Our friends can see from the picture above how the celery-crop covered the ground and bleached itself with the double rows between the two wide boards placed only about a foot apart. The two rows with the 18-inch board on each side would occupy a little more than a foot—say 15 inches of the space between the rows. This would leave about 20 inches for a path to go between the celery rows with boards on each side. As I understand it, the manure is to be packed 4 inches deep around the plants between the boards; that is, as soon as they are tall enough to be mulched. With four inches of good strong manure it would not take very much water to keep the ground constantly moist. Now, I would put a manure mulching in the paths as well as around the plants between the boards—that is, unless your ground is exceedingly rich. That tank kept supplied with water by means of a windmill is another important feature in making it a success. Plenty of water and plenty of manure will do almost any thing with celery, especially where the manure is applied as a mulch. It would cost something to furnish water, manure, and boards for a whole acre on this plan; but I tell you, the crop, if managed right, would bring in a lot of money. I know it will succeed, for I have seen a modification of it on the celery-farms near us.

PREPARING GROUND FOR STRAWBERRIES.

Right near our quarter-acre of plant-beds is a piece of poor clay ground that persistently refused to give decent crops of any thing. It was not only poor soil, but it was in a low spot where water had stood. I underdrained it, but it was soggy and sour, even then. Then I made surface-drains all around it. I plowed it up, worked down the lumps, and put on manure. I suppose a good many old farmers would have said I had better let it alone and make garden somewhere else. But the ground was near the railroad, and had cost at about the rate of \$2000 an acre. We bought it more to prevent somebody else from locating there than for almost any thing else. Well, I kept

on working the ground, plowing manure under, and working old well-rotted manure into the surface, but still it did not seem to amount to much. Then I put on some cotton seed that came to us with sweet potatoes packed in them; put on poultry manure; then I gave it a good dressing with lime, and finally it began to respond and "smile." We put out Marshall strawberries and other kinds that were in good demand, and began to sell plants. The results of my patient working and manuring began to be apparent. We had great beautiful berries, wonderfully large and beautiful green leaves, and then great runners almost as large as slate-pencils in size. And then what beautiful plants we secured to send out to customers!

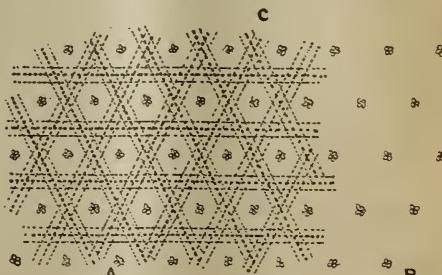
We kept working the ground with wheel-hoes between the rows; and every little while, when the plants got to getting out into the paths, so it was difficult to cultivate, we would stretch a string and take up all the plants outside of the string. Then just after a rain we would run the hoes again until the ground was fine, soft, and mellow. At one time I felt a little fear that I was throwing money away by putting manure and work on that piece of ground. But it has given us beautiful plants that have paid several times over for the manure and labor, and the ground is in such tilth now that it goes right ahead without any manuring. In fact, it is the finest piece of ground, I do believe, on our premises. Any thing will grow there. You may say we get our money back because we are selling plants at good prices. But I think you will get your money back for fixing up a piece of ground like this, even if you do not sell a plant. In the first place, you get fruit that "astonishes the natives," both in quantity and quality. If you do not sell plants, you probably buy them, more or less. Now, have a piece of ground like this; and when new plants come out, that cost a lot of money at first, purchase just one plant. If it does not become popular, you are not much out of pocket; but if it does, you can raise your own plants at a cost of less than a cent apiece, when they may be worth a dollar a dozen, or even two dollars, on the market.

There are three or four new strawberries that command very high prices in almost any market. The man who purchased only one plant last year, and raised a lot of young ones from it, is lucky. The Nick Ohmer, Margaret, Carrie, and Darling are all plants of this kind. Another thing, it is fun to have a garden where you have a piece of ground that just makes every thing boom. On our clay soil, when we once get a piece like this into high-pressure condition the effect of the heavy manuring lasts through a long period of years. In the shade of our machine-shop there are some beds that were fixed up several years ago. They have had no manure for several seasons. As they are so much shaded we use them only for celery-plants. The ground is fine, soft, dark, and rich; and it is a beautiful place to heel in stuff for a few days, where we want it in the shade. The quality of the soil seems to invite any plant to

put out roots. In fact, we have been selling the dirt to the people around town for their house-plants, at 25 cents a bushel. Now, every one of you, I am sure, can afford to have a little piece of exceedingly rich ground near your homes. First have it perfectly underdrained; then either spade or plow it up very deep. Let it freeze in winter, and dry out in summer; then plow, pulverizing it at just the right time after every summer shower. Get out all the sticks and stones. If it is heavy clay, put in some sand. Give it a coating of lime occasionally; and, above all, work in lots of good stable manure; and be sure that you do not let it spend its energies in growing great weeds after you get it up to the high-pressure notch. Such a piece of ground will grow weeds higher than the eaves of your house in an incredibly short space of time, if they once get a going.

OUR HALF-ACRE STRAWBERRY-PATCH WITH PLANTS TWO FEET APART EACH WAY.

Last fall I told you about this—see diagram below. We are just now having fun running the wheel-hoe through it after every summer shower, cultivating it in all three directions, as shown in the diagram. The ground is getting so soft and fine that the boys do not dislike the job of cultivating it at all; and, in fact, it is but little work to keep it clean, and the ground soft and fine. The plants are growing *amazingly*. The original idea was, you may remember, to take off every runner as fast as it showed itself. But a difficulty presents itself right here. As this was to be a trial patch of the different varieties for hill culture, it contains some very high-priced plants; and to pull off the runners and throw *them* away would be rather extravagant; therefore we have decided to let runners grow on at least a part of these valuable plants, and get *them* to take root in little pots of jadoo. After the roots have started you can clip off the runner and move the plants into a shaded bed. I do not believe this will rob the parent plant of very much vitality. It will be keeping off the runners, with this difference: we allow them to commence taking root before we "wean" *them*, or before we take *them* away from the mother-plant entirely. But I tell you it is fun to have a strawberry-patch so you can run the cultivator all around every plant, and do it fast. The matter is so much of a success at the present stage that we thought best to give you a cut once more.



Please note that the dotted lines show how we run the three-tooth Cole hand wheel-hoe.

THE SOJA BEAN COMPARED WITH THE
COW-PEA.

The following from Prof. Brooks, of the Massachusetts Agricultural College, answers so well the questions that have been asked by a good many that we copy it from the *Rural New-Yorker* of May 7, with some few omissions:

We prefer the soja bean to the cow-pea, either as a fodder crop to be fed green, or to be put into the silo, for the following reasons:

The soja bean, suitable variety being selected, will ripen in this locality, while the cow-pea will not. This enables the farmer to produce his own seed, and, further, the plant can be allowed to reach a degree of maturity sufficiently advanced to make the fodder less watery, and richer in the most important constituents of plant-food than the cow-pea in the immature condition in which it must be cut.

The soja bean is a considerably richer fodder than the cow-pea.

The Medium Green variety, which I believe is the very best sort for this latitude, constitutes the better basis for comparison with the cow-pea. It will be noticed that this variety gives us nearly twice as much fat, more than 1½ times the amount of flesh-formers (protein), and about 1½ times the amount of heat producers (carbo-hydrates) as is given by the cow-pea.

When, in the light of these facts, we consider further that the Medium Green soja bean has, upon an average, as grown here, produced as large yields as the cow-pea, its superiority becomes strikingly evident. The crops of both usually average from 10 to 12 tons per acre, green weight. With a yield of 10 tons, the cow-pea will give us the following number of pounds of the different nutrients per acre: Fat, 140 pounds; flesh-formers, 620 pounds; heat-producers, 1720 pounds. The soja bean with the same crop gives us: Fat, 240 pounds; flesh-formers, 1160 pounds; heat-producers, 2400 pounds. These facts make the apparent superiority of the soja bean as a fodder crop very clear.

As is well known, however, the value of a fodder does not depend entirely upon composition, but is affected in a marked degree by the digestibility of the nutrients which it contains. There is some evidence that the digestibility of the soja bean is not quite so great as that of the cow-pea; but sufficient experiments have not been made to enable us to form a final judgment upon this point.

The soja bean, being less watery than the cow-pea, keeps better in the silo. We have made excellent ensilage by mixing either corn or Japan barnyard millet with the soja bean in the proportion of two parts of either of the former to one of the latter. Such ensilage is palatable, and in composition approximates closely the German feeding standard for milch cows. One peck of seed will plant a little more than one-half acre. If sown for seed I would drop about eight seeds per running foot in the row; if for fodder, from 10 to 12 seeds. The distance between the rows on good land should be about 2½ feet. If the land is poor the rows may be somewhat nearer together. The crop does well on any good corn land, and should be planted about the same time that corn is planted. The seed can be very satisfactorily put in with any corn-planter that plants in drills.

These beans are edible, and are the richest known natural vegetable product. I do not believe, however, that they will be as well liked for table use as some of our older varieties of beans; they are too rich and oily to suit most tastes. They are not much used directly as food, even by the Japanese, but are largely employed in the manufacture of a table sauce known as shoyu (soy), whence, probably, the names soja, soya, and soy. They are, also, largely used for the manufacture of a bean cheese, which is a favorite and largely used article of food. A great many of the beans are, also, used as food for horses and catt'e.

Mass. Ag'l College. [PROF.] WM. P. BROOKS.

THE HOME MIXING OF FERTILIZERS.

The above is the title of a newspaper bulletin from our Ohio Experiment Station, sent out April 11. Within a short distance of our place a sub-station has been chosen, for the reason that it is about as poor clay soil as any to be found in the State. At this sub-station home-

mixed fertilizers have been carefully tested side by side with prominent brands in the market; and the home-mixed, at about \$18 a ton, has given results fully equal to the factory brands costing \$30 a ton. In some instances the home-mixed, that cost but little more than half as much as the commercial brands, have given equally good results. The crop raised was corn. Full particulars in regard to mixing, where to buy the materials, etc., are given in the bulletin. If you want it, write to the Ohio Experiment Station, Wooster, Ohio, calling for Bulletin 182.

GOOD NEWS FOR THE FARMERS.

It rejoices my heart to see things brightening up among the agricultural people generally, with wheat toward \$1.50, potatoes toward \$1.00 a bushel, etc. I know it is a little hard on the laboring man; but things have been a good deal harder on the tillers of the soil for quite a spell back, and I think the laboring man and the other folks can stand it. If you think the farmers are getting rich too fast, or are getting more than their share, get some ground, and raise wheat and potatoes yourself. See?

KEEPING OVER EGYPTIAN ONION-SETS.

Mr. Root.—You say your Egyptian onion-sets do not keep well over winter. Mine always do. I keep them outdoors in a wagon-house, without any protection, spread on the floor. I always plant in the spring.

Lordstown, O., March 28.

H. A. SIMON.

Do you mean, friend S., that you let them freeze and thaw just as much as they will? I know they are very hardy, but freezing and thawing makes them wet; and when they are wet they will sprout, so you will have onion-sprouts in the spring, instead of onion-sets. Please tell us in what shape you put them in the wagon-house—spread out thin on the floor or in a heap? and don't you cover them with hay, straw, or any thing of that sort? Do you put them on the ground or in an upper loft?

ONION-SETS FROM LARGE ONIONS.

My people used to raise the top onion as long ago as I can remember, and they are a splendid onion, I think. They used to keep the same old onions year after year to raise sets from, and always had a crop of more or less little onions; whereas in sowing seed it would often fail. In setting out the little onions, once in a while there would be one run up to form top onions; they broke them off or pulled them up, as that onion would amount to nothing. In setting out the big onions to raise little onions I prefer setting out new big ones every season, as I think they supply more top sets. I have seen very nice large onions raised of this kind.

Barbours, Pa., April 5.

MRS. ANN SCAIFE.

I have been looking for those onions for years. My father raised them for sale. He would not bother with black seed. If they get frozen in winter it does not hurt them if they are not frozen badly and repeatedly thawed out and frozen.

Taylor, Arizona, April 6. MRS. D. ELLSWORTH.

THE OREGON BLACKBERRY IN ILLINOIS.

One of my neighbors, 15 years ago, was in Oregon, and was so well pleased with the Oregon vining blackberry that he brought some here and planted them. They grew well on clayey white-oak land; also in rich garden soil; make large growths, but kill to the ground every winter. I have had them for ten years. They never bear anything except a little on the shoots of the same year, late in the fall. I never saw one gallon in a year, on a patch of four square rods. I have been trying to kill out a few in the garden, but they still hold their place.

M. W. MURPHEY.

Cuba, Ill., Feb. 25.

LONG-RANGE WEATHER-PREDICTIONS, ETC.

In our issue for Jan. 1, page 26, and Feb. 15, page 152, in commenting upon and comparing the work of the United States Weather Bureau with that of Mr. Hicks and others, I used language to which Mr. Hicks takes exception, claiming that I assailed his personal-character. To correct such wrong impression, and wishing to be entirely fair, I would say that I am not personally acquainted with Mr. Hicks, and had no means of knowing his private life. I did not then intend to, neither do I now, desire to reflect on his personal character; indeed, I have been told that it is above reproach, and that Mr. Hicks himself repudiates all connection with astrology. For whatever I may have said reflecting on his moral character or his standing as a Christian, I beg pardon. So far, so good; but that does not alter my opinion of *his forecasts*. Believing that his theories respecting long-range predictions were unsound and unscientific, and at variance with the principles and teachings of the United States Weather Bureau, I felt then and do now that the publication of his forecast was doing *harm*; and that as a publisher, and one who has had quite an extended correspondence with the Weather Bureau people, it was my Christian duty to criticise, which I did.

I am glad to be able to indorse the chapters in Hicks' almanac on the use of the barometer, and the one on constructing safety-cellars and cyclone-caves. This latter chapter I shall be glad to see published in every home paper in the land. It gives not only full directions for constructing a cellar where the inmates of the home may be safe during a cyclone, but it also gives plain and sensible directions how to behave at such a time—putting out lighted lamps, fires, etc., so the house may not be burned up after it has been blown down.

DONATIONS UP TO DATE FOR THE SHAWNEETOWN DISASTER.

Mr. A. I. Root: — As all donations were to be acknowledged through GLEANINGS, I inclose a list up to date. I am deeply thankful for what they have done. Some have been very liberal indeed. If any one has sent money direct to me, and his name does not appear, he will do a kindness by writing to me. I have private reasons for same. The following is a list of the donations:

A friend in Illinois, \$10.00; Leahy Mfg. Co., Higginsville, Mo., \$14.50; Mr. J. Hartzell, Udison, Pa., \$1.00; Mr. C. Theilmann, Wabasha, Minn., \$1.00; Unknown, Pennsylvania, 20 cts.; Mrs. A. Stevenson, Tingley, Ia., \$1; Mr. H. D. Edwards, Delhi, Ill., \$1.00; D. M. Swain, Parkville, Ind., \$1.00. Total, \$29.70.

DONATIONS IN BEES.

E. T. Flanagan, Belleville, Ill., 3 colonies; D. M. Swain, Parkville, Ind., 1 colony; Hoffman & Davis, Holtona, Tenn., 2 colonies; Alfred Smith, Mt. Vernon, Ind., 1 colony; C. E. Hardesty, Canton, Ohio, 1 colony.

THOS. McDONALD.

Shawneetown, Ill., May 6.

Please find inclosed \$2.00 for Mr. Thos. McDonald, in Shawneetown. AARON NYHUISE & SON.
Evansville, Ind.

Sirs.—Please find inclosed one dollar for Mr. McDonald, of Shawneetown. OLIVER THORN.
St. Hyacinthe, Que., Can., May 8.

A. I. Root: — I wrote Thomas McDonald, of Shawneetown, Ill., that I would send him a good colony of bees. I think we bee-men ought to help him to get a start. If each one would do the same he would soon be on his feet again. C. E. HARDESTY.
1830 Hurford St., Canton, O.

ELECTRO CHEMICAL FINGER-RING.

This is a remedy(?), not only for rheumatism, but for gravel, gallstone in the bladder, diabetes, Bright's disease, and other chronic troubles that baffle the best physicians of the present day. The price of the ring is \$2.00; gold-cover, \$4.00. The plain ring is just as good(?), but it does not look as nice as the gold one. It is after the Electropoise and Oxydonor type, even to the reading-matter. We submit a sample of it.

That electricity, if it can be applied continuously and in the proper proportion, will remove acid from the blood, is admitted by all.

Not quite, Mr. Electricity man. I know of quite a few people who do not agree with the above.

The current is so slight that it is not annoying to the most delicate person or child any more than a gold ring would be, until becoming accustomed to wearing it.

I read the above over several times, but I confess I do not quite understand what the patient is to become "accustomed to" unless it is the "not annoying" part.

The electro-chemical ring is guaranteed to retain its original quality until worn out.

Well, now, it is comforting to know that we agree on something, and I can stand right back of you, my good friend, in your assertion that the original quality will keep "right on" until the ring is worn out. Good! But now for the rest:

It is not charged with electricity nor magnetism, but remains inactive until it comes in contact with the acid in the blood, when it generates an electro-chemical action. It will stop any further accumulation to enlarged joints.

Here we must take issue. The idea that a finger-ring, no matter how it is made, will prevent further enlargement of joints by "electro-chemical action," is all stuff and bosh. Why, look here, friends; instead of paying out good money for rings and apparatus, just buy a horseshoe and nail it over the door, and it will not only cure all the diseases you are afflicted with, but also those of every member of your household. More than that, you can tell the neighbors that whoever goes in and out through that door, and passes under that horseshoe, will be well, and full of vim and vigor. The horseshoe will not begin to cost as much as Electropoise, Oxydonor, or even this finger-ring. The horseshoe cures exactly on the same principle as these advertised toys; and I think every intelligent up-to-date physician in our land will stand by me, at least thus far, that the horseshoe will do just as much as these senseless traps. The proprietor of the electric finger-ring gives the names of a good many people occupying prominent business places in Toledo, Ohio, in proof of its magical efficacy.

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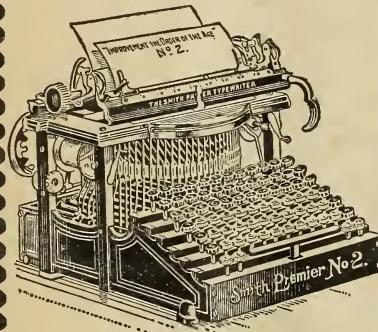
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Untested, after May 1st, 75c; 6 for \$4.00. Tested, \$1.00; 6 for \$5.00. Breeders, \$2.00. The best of stock, either Golden or Leather colored.

W. H. LAWS, Lavaca, Seb. Co., Ark.

TEXAS QUEENS.

Best honey-gathering strain in America. Untested, \$1.00; tested, \$1.50. Ready to mail April 1. Write for circular.

J. D. GIVENS, Lisbon, Texas.

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W. D. SOPER, Box 565, Jackson, Mich.

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That will give satisfaction in the way of big colonies, that are gentle, and the best of honey-gatherers, try our strain of Italians. Tested queens, \$1.00; untested queens, 75 cts. each; \$8.00 per dozen.

J. W. K. SHAW & CO., Loretteville, La.

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Queens, \$1.00; bees by the pound, \$1.00; nuclei, two-frame with queen, \$2.00; one-frame, \$1.50; full colonies, \$5.00. Also fancy poultry.

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